

1990

Virginia Commonwealth University Medical College of Virginia Bulletin

Virginia Commonwealth University

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MEDICAL COLLEGE OF VIRGINIA

BULLETIN

1990-91

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VIRGINIA COMMONWEALTH UNIVERSITY
RICHMOND, VIRGINIA

Medical College of Virginia Bulletin
1990-91

Virginia Commonwealth University
Richmond, Virginia



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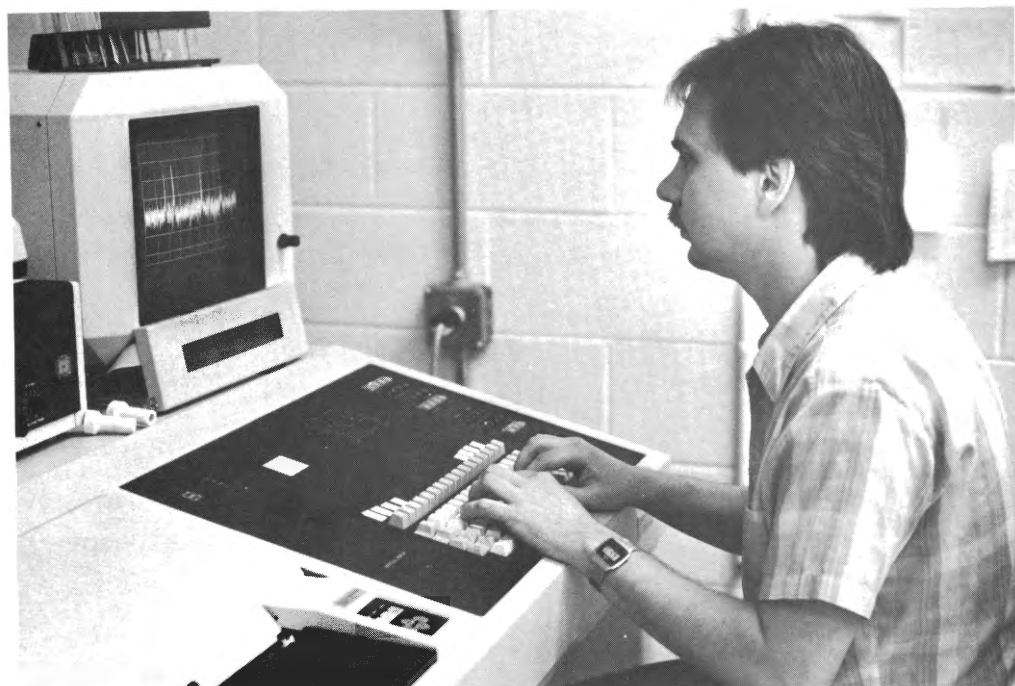


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LIMITATIONS ON BULLETIN PROVISIONS

All rules and regulations set forth in this bulletin will apply until further notice. The university reserves the right to make changes in courses of study, fees, rules, and regulations governing the conduct of the work in all schools and programs, faculty and staff, and classification of students whenever university authorities deem it expedient or wise to do so.

1990-1991 MCV Campus Calendar

1990

August

Monday—Wednesday	20-22	—Orientation and registration for MCV Campus students
Monday—Friday	20-24	—Orientation and advising for all day students—Academic Campus
Tuesday	21	—Faculty Meeting at 3:30 pm—MCV Campus
Thursday	23	—Classes begin at 8 am—MCV Campus
Thursday—Thursday	23-30	—Add/drop and late registration—MCV Campus
Saturday	25	—Official date for certifying August diploma
Monday	27	—Classes begin at 8 am—Academic Campus

September

Monday	3	—Labor Day holiday
Friday	21	—Last day for fall degree candidates to submit graduation applications for December degrees

October

Friday	19	—Last day to drop a course with a mark of "W"—both campuses (except for courses not scheduled for the full semester)
Monday—Friday	22–Nov 2	—Advising for continuing students for spring semester

November

Monday	5	—Spring semester advance registration begins for all continuing students
Wednesday	21	—Thanksgiving holiday begins at 5 pm. No evening classes will meet
Monday	26	—Thanksgiving holiday ends at 8 am

December

Friday	7	—Last day of classes for fall semester—both campuses
Monday—Tuesday	10-18	—Final examinations for fall semester—Academic Campus day classes
Monday—Friday	10-14	—Final examinations for fall semester—MCV Campus
Tuesday	18	—Christmas vacation begins at 5 pm
Saturday	22	—Official date for certifying December diploma

1991**January**

Monday	14	—Classes begin at 8 am—both campuses
Monday–Thursday	14–17	—Add/drop and late registration for all students
Friday	25	—Last day for spring degree candidates to submit graduation applications for May degrees

March

Friday	8	—Last day to drop a course with a mark of “W”—both campuses (except for courses not scheduled for the full semester)
Saturday	9	—Spring vacation begins at noon—both campuses
Monday	18	—Spring vacation ends at 8 am—both campuses
Monday–Friday	18–29	—Advising for continuing students

April

Monday	1	—Fall semester advance registration begins for all continuing students
Tuesday	30	—Last day of classes for spring semester—Academic Campus

May

Thursday–Friday	2–10	—Final examinations for spring semester—Academic Campus day classes
Friday	3	—Last day of classes for spring semester—MCV Campus
Monday–Friday	6–10	—Final examinations for spring semester—MCV Campus
Saturday	18	—Commencement (including August and December graduates)

Note: All of the above dates do not apply uniformly to all programs on the MCV Campus. Students will be advised of departures from this calendar by their respective deans or program directors and should follow schedules as provided by them. This calendar is subject to change.



Dear Health Professions Student:

It is my pleasure to welcome you to Virginia Commonwealth University.

The Medical College of Virginia has a distinguished history in education in the health sciences in Virginia, beginning with its inception as the medical department of Hampden-Sydney College in 1838. Today, the Medical College of Virginia Campus is part of a thriving diverse institution; the University, in fact, is Virginia's largest public urban university. Diversity may be found in its multicultural student body and faculty, its multifaceted architecture, and its multidisciplinary academic offerings.

This bulletin introduces you to the health sciences programs available at VCU. It contains complete and comprehensive information regarding program requirements and standards and may be used both by prospective students wishing to learn more about the health sciences programs offered by the University and by enrolled students as they work to complete their degrees.

The MCV Campus encompasses the Schools of Allied Health Professions, Basic Health Sciences, Dentistry, Medicine, Nursing, and Pharmacy, and the Medical College of Virginia Hospitals, the fourth largest teaching health care complex in the country. The University also supports a comprehensive cancer treatment center and extensive research facilities in which health sciences faculty conduct biomedical and biotechnical research projects funded at more than \$63 million annually.

As a major academic health sciences center, the Medical College of Virginia of Virginia Commonwealth University offers students a challenging environment in which to prepare for a career in health sciences and health care. We are proud to have you here as you pursue your professional education.

Sincerely,

A handwritten signature in black ink that reads "Eugene P. Trani". The signature is written in a cursive, flowing style.

Eugene P. Trani
President

PART I — General Information

THE UNIVERSITY

Virginia Commonwealth University is a state-supported institution with an enrollment of approximately 20,000 undergraduate, graduate, and health professions students studying on its two campuses in Richmond, Virginia. The Medical College of Virginia Campus is located near the financial, governmental, and shopping areas of downtown Richmond; the Academic Campus is two miles west in Richmond's historic Fan District, a residential area which dates from the nineteenth century.

The University takes its founding date as 1838, the year in which the Medical College of Virginia was created as the medical department of Hampden-Sydney College. MCV became an independent institution in 1854 and state-affiliated in 1860.

VCU's Academic Campus began in 1917 as the Richmond School of Social Work and Public Health. In 1925, it became the Richmond Division of the College of William and Mary; and in 1939, its name was changed to Richmond Professional Institute of the College of William and Mary, from which it separated in 1962 to become an independent state institution.

In 1968, the two institutions merged to form Virginia Commonwealth University: the undergraduate, graduate, and professional programs of Richmond Professional Institute joined with one of the largest and most comprehensive medical centers on the East Coast to create a major state university.

VCU boasts a diverse student body and one of

the largest evening colleges in the United States. The University's level of funded research places it among the top 75 colleges and universities in the country in attracting research grants. Its faculty, representing the finest American and foreign graduate institutions, enhance VCU's position among the important institutions of higher learning in the United States through their work in the classroom, the laboratory, the hospital, and as published in scholarly journals. VCU maintains active communications with its growing cadre of alumni and enjoys a cooperative and stimulating relationship with the city of Richmond. This relationship encompasses the arts, the business community, the architectural community, and local government. Today VCU operates a major teaching hospital and is composed of a college, 12 schools, and the School of Graduate Studies. These academic units offer 60 undergraduate, 60 master's, 18 doctoral, three first-professional degree programs, and five post-baccalaureate certificate programs.

VCU's location in Richmond affords its students the benefits of living in one of the South's most cosmopolitan cities. Located in central Virginia, Richmond is a two-hour drive from the Atlantic seashore to the east, Appalachian mountain recreational sites to the west, and Washington, D.C. to the north. A wide range of cultural, educational, and recreational facilities and activities is available in the Richmond area, including a full performance schedule at VCU's own Performing Arts Center. VCU's proximity to downtown Richmond, which is Virginia's

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capital and a major East Coast financial and manufacturing center, provides students with opportunities for part-time employment and student housing in a variety of settings.

ACADEMIC COMPOSITION OF THE UNIVERSITY

VCU is composed of the following colleges and schools:

- College of Humanities and Sciences including the School of Mass Communications
- School of Allied Health Professions
- School of the Arts
- School of Basic Health Sciences
- School of Business
- School of Community and Public Affairs
- School of Dentistry
- School of Education
- School of Graduate Studies
- School of Medicine
- School of Nursing
- School of Pharmacy
- School of Social Work

THE MEDICAL COLLEGE OF VIRGINIA

The Medical College of Virginia of Virginia Commonwealth University was founded on December 1, 1837, when the president and trustees of Hampden-Sydney College created a medical department in Richmond. This medical department became the Medical College of Virginia (MCV), an independent institution, in 1854. In 1860, when Virginia appropriated \$30,000 for MCV's first hospital, Old Dominion Hospital, MCV became a state-supported institution.

The first outpatient clinic was established in 1867.

In 1893 a second medical college, the College of Physicians and Surgeons, was established just two blocks from the Egyptian Building, MCV's oldest building. In 1894 its name was changed to the University College of Medicine. This college and MCV were consolidated in 1913.

MCV today consists of the Schools of Allied Health Professions, Basic Health Sciences, Dentistry, Medicine, Nursing, and Pharmacy. The Massey Cancer Center was added in 1974.

About 3,500 students, interns, residents, and postdoctoral fellows receive education in the health sciences on the MCV Campus. Presently, the MCV Hospitals are authorized to maintain a bed complement of 1,058.

MISSION OF THE UNIVERSITY

Virginia Commonwealth University is a public, urban, research university, supported by the Commonwealth of Virginia to serve the people of the Commonwealth and the nation. The University provides a fertile and stimulating environment for learning, teaching, research, creative expression, and public service. Essential to the life of the University is a faculty actively engaged in scholarship and creative exploration—activities that increase knowledge and understanding of the world, and inspire and enrich teaching.

The University is dedicated to educating full- and part-time students of all ages and diverse backgrounds in an atmosphere of free inquiry and scholarship, so they may realize their full potential as informed, productive citizens with a lifelong commitment to learning and service.

The University serves the local, state, national, and international communities through its scholarly activities, its diverse educational programs, and its public service activities. As an institution of higher learning in a metropolitan center that is also the capital of the Commonwealth, the University enjoys unique resources that enrich its programs and offer special opportunities for contributing its intellectual and creative expertise in the development of innovative approaches to meet the changing needs of our society.

The goals of Virginia Commonwealth University in carrying out its mission are to

- provide undergraduate education that includes a broad and rigorous foundation in the arts, sciences and humanities, and explores the ideas and values of humankind;
- offer nationally and internationally recognized professional and graduate programs leading to doctoral, master's, and other terminal and advanced degrees in the professions, the sciences, the humanities, and the arts;
- foster a scholarly climate that inspires creativity, a free and open exchange of ideas, critical thinking, intellectual curiosity, freedom of expression, and intellectual integrity;
- expand the boundaries of knowledge and understanding through research, scholarship, and creative expression in the sciences, arts, humanities, and the professional disciplines;
- value and promote racial and cultural diversity in its student body, faculty, admin-

istration, and staff to enhance and enrich the University;

- develop and sustain a faculty of the highest quality by providing an environment conducive to their achieving and maintaining national and international stature and by continuing to attract both recognized scholars and outstanding individuals with a high potential for scholarly achievement and excellence in teaching;
- provide an optimal environment for educating and training health care professionals, for conducting research to improve health care and delivery, and for meeting the needs of patients and the community in a comprehensive health care setting;
- use the urban environment as a laboratory for studying and developing new approaches to problems pertaining to the public and private sectors;
- support, through its commitment to public exhibitions, performances, and other cultural activities, the imaginative power of the liberal, visual, and performing arts to express the problems and aspirations of humanity and to enrich the lives of individuals;
- develop innovative programs for continuing education that establish permanent intellectual connections between the University and its constituents, enhance professional competence, and promote dialogue on public issues;
- offer diverse opportunities for individuals to benefit from higher education through a variety of avenues to include flexible scheduling for part-time undergraduate and graduate students, open admission for nondegree-seeking students with appropriate preparation, advanced degree programs for working professionals, selected programs in diverse locales, admission for graduates with appropriate associate degrees of arts or sciences, and support programs for specially admitted students;
- promote interdisciplinary studies within the University to bring new perspectives to bear on complex problems; and
- mobilize its creative energies and its expertise to meet the needs of society and individuals in its unique role as Virginia's major urban university.

MCV CAMPUS MISSION

The Medical College of Virginia Campus is an integral part of Virginia Commonwealth University, a comprehensive urban-based public institution of higher education. The six academic schools and teaching hospitals of the Medical College of Virginia Campus exist primarily to serve the needs of the citizens of Virginia for

- Transmittal of knowledge related to the health services;
- Continuity in the supply of health manpower;
- Accessibility to comprehensive and quality health-care services;
- Development and dissemination of new knowledge for the advancement of the health sciences.

Cognizant of the societal nature of these needs and its public trust, the Medical College of Virginia Campus is committed to serving these needs in the most effective and efficient manner possible.

Education

The Medical College of Virginia Campus is committed to educational programs directed toward providing graduates capable of meeting the state's health needs. Programs are dedicated to maintaining and updating competency of health professionals as well as preparing graduates to enter the health professions. Educational programs are supported by several academic disciplines, the teaching hospital, carefully selected off-campus health facilities, and an institutional commitment to effective teaching.

Service

The Medical College of Virginia Campus is committed to a comprehensive program of patient care: to demonstrate excellence in practice as a model for students, to provide a base for study designed to improve patient care, to meet needs of patients in its hospital's service area, and to offer highly specialized services in clinical areas of demonstrated expertise.

Research

The Medical College of Virginia Campus is committed to research programs, to develop new knowledge from studies ranging from the molecular level through clinical procedures to health care delivery and outcomes, to model for stu-

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dents a spirit of inquiry and the application of the scientific process to patient care, and to focus interdisciplinary effort on problems amenable to the scientific approach.

ACCREDITATION

Virginia Commonwealth University is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools. All schools and courses on the MCV Campus are accredited by the agencies and organizations appropriate to the school or course concerned.

CENTER FOR EDUCATIONAL DEVELOPMENT AND FACULTY RESOURCES (CEDR)

CEDR has as its mission the strengthening of university resources devoted to education. This mission is pursued through work in the areas of instructional development, faculty development, and student development. In each area, extramural funding is sought to augment basic university capabilities.

Currently, examples in the area of instructional development include a project to strengthen cancer education in nursing, medicine, and dentistry (funded by the National Cancer Institute) and provision of staff support to the VCU Varieties of Undergraduate Experience Project.

In the area of faculty development, operation of the Faculty Resource Office is the major activity. This office provides information to faculty on career development opportunities, including the National Faculty Exchange; on extramural funding sources for scholarly projects; and offers consultation on teaching issues. Faculty workshops are offered from time to time. CEDR also coordinates the Central Virginia Faculty Consortium.

Student development activities include the provision of academic skills development services on the MCV Campus and nurturing the interest of minority students from both campuses in careers in the health professions.

Most CEDR projects are carried out in collaboration with faculty from the several schools both informally and through formal appointment as CEDR Faculty Fellows (short-term) or joint appointments. Close working relationships are maintained with Sponsored Programs Administration and the University Advancement Program.

MASSEY CANCER CENTER

The Massey Cancer Center is a focal point for basic and clinical cancer research and cancer health care delivery at Virginia Commonwealth University. Massey Cancer Center programs involve many facets of the University's academic life and encompass all schools of the MCV Campus as well as departments on the Academic Campus. Basic research activities are organized into specific program areas; each consists of a group of investigators with common scientific interests who collaborate in cancer-related research, applying diverse technologies and perspectives. There are nine program areas: (i) mechanisms of regulation of gene expression; (ii) cellular and molecular biological aspects of the regulation of normal and malignant cell growth and differentiation; (iii) regulation of immune cell activation and function; (iv) basic studies on the pathogenesis of immunodeficiency states and the infectious processes that complicate these disorders; (v) carcinogenesis and experimental tumor biology; (vi) biochemical and molecular pharmacology of antineoplastics; (vii) the molecular and cellular biological consequences of ionizing radiation; (viii) the biology of tumors of neural origin; and (ix) structural molecular biology.

The Massey Cancer Center operates and subsidizes a variety of core facilities that provide complex technologies to basic scientists at Virginia Commonwealth University. These include:

- the Flow Cytometry Facility;
- the Hybridoma-Monoclonal Antibody Laboratory for the development and purification of monoclonal antibodies;
- a Nucleic Acid Synthesis and Analysis Facility;
- an Athymic Nude Mouse Facility that breeds and makes available nude mice to research scientists;
- the Bone Marrow Transplantation Research Laboratory that brings together basic and clinical scientists with diverse perspectives to apply new developments and technologies in their fields to problems relevant to human bone marrow transplantation;
- a Molecular Biology Laboratory designed to meet the needs of investigators who require access to molecular genetic techniques such as Northern and Southern blotting, plasmid and phage production, and simple sub-cloning procedures;

- a Human Tissue Acquisition and Histopathology Laboratory that provides a central facility and personnel to retrieve and store tissues for investigation;
- a Structural Molecular Biology, Molecular Modeling, and Computer-Assisted Drug Design Facility that applies x-ray crystallography, molecular modeling, computational chemistry, and high dimensional nuclear magnetic resonance to support a variety of research projects that explore the structure of regulatory proteins, enzymes, and nucleic acids; and
- a Biostatistics Facility that provides consultative services for statistical analyses and the design and interpretation of basic and clinical studies.

There are extensive clinical service and research programs at the Massey Cancer Center. Special outpatient clinics focus on multi-disciplinary approaches to the management of patients with malignant diseases and encompass faculty in the Departments of Pediatrics, Internal Medicine, Surgery, Obstetrics and Gynecology, Pathology, Radiation Oncology, and Radiology. There are dedicated inpatient units in Hematology/Oncology, Surgical Oncology, and Gynecologic Oncology. The Bone Marrow Transplantation Service offers allogeneic and autologous transplantation to adult and pediatric patients.

A recent new thrust of the Cancer Center is the Cancer Control Program designed to develop new approaches to the delivery of cancer health care to rural populations near their homes and workplaces. The scientific core of the program comprises two research resources. The Outreach Program delivers state-of-the-art cancer care and technology to rural Virginia communities, reducing distance barriers, and provides a clinical laboratory for evaluation of primary, secondary, and tertiary interventions. The Virginia Cancer Patient Data System links traditional tumor registry information with sociodemographic and health-care financing data; this provides an epidemiologic laboratory in which to address more general aspects of cancer care such as rural-urban variations in diagnosis and treatment and health-care financing implications for the development of alternative plans for cancer care delivery to rural populations. A Cancer Education Program focuses on innovative new approaches to the delivery of information on cancer prevention, early detection, and treatment to the large

population of citizens with limited reading skills. A National Cancer Institute-designated Cancer Information Service provides a telephone link between the Center and all Virginians for the dissemination of information about cancer, with a particular focus on the geographic areas that surround rural Massey Cancer Center satellites.

VIRGINIA CENTER ON AGING

The Virginia Center on Aging, established at Virginia Commonwealth University by the Virginia General Assembly in 1978, is a state-wide resource for aging-related research, education, service, training, and technical assistance. It serves as a focal point for the collection, assessment, and maintenance of data on elders in the Commonwealth; designs and tests innovative demonstration projects in education and service delivery; and assists public and private organizations in meeting the needs of older citizens.

The Virginia Center on Aging and the Department of Gerontology, School of Allied Health Professions, maintain the Information Resources Center, a broad collection of print and audiovisual materials on aging that are available on loan or to rent. Short reports, training manuals, and vertical files may be obtained at cost. The Center on Aging also administers the Alzheimer's Research Award Fund to provide grants to researchers in Virginia, and coordinates Elderhostel in Virginia, an international residential learning experience for older adults that annually draws over 4,000 Elderhostelers to the Commonwealth.

DIVISION OF CONTINUING STUDIES AND PUBLIC SERVICE

One of the major purposes of Virginia Commonwealth University is to provide continuing education opportunities for citizens throughout the state. Through the Division of Continuing Studies and Public Service, the University provides a variety of credit courses during the evening and off campus, all of which are degree-applicable. In addition, numerous CEU or non-credit courses, workshops, institutes, and seminars ranging from cultural enrichment programs to specific professional topics are made available both on and off campus.

Through the evening and off-campus credit offerings, the University provides opportunities for many adults who, because of job or other responsibilities, would otherwise be unable to

pursue courses of study in higher education. In order to extend its educational program to an even broader population, the University offers a Bachelor of General Studies degree, a non-traditional University program administered by the Division of Continuing Studies and Public Service. This division also administers the Master of Interdisciplinary Studies degree program, the Cooperative Education Program, the Office of Television and Teleconferences, the University Advising Center, the Office of International Education, and professional continuing education.

A majority of the offerings of the Division of Continuing Studies and Public Service are announced in the division's bulletin which is distributed two times each year through the local newspapers. Special courses and programs directed toward specific professional groups may be announced in appropriate journals and by direct mailings.

Further information may be obtained by writing to Virginia Commonwealth University, Division of Continuing Studies and Public Service, 827 West Franklin Street, Richmond, VA 23284-2041, (804) 367-8421.

LIBRARIES AND THEIR RESOURCES

University Library Services (ULS) administers the major research libraries on both campuses. Collections are housed in James Branch Cabell Library on the Academic Campus, Tompkins-McCaw Library on the MCV Campus, and in three learning resource centers. In addition, ULS operates Media Production Services and video teleconference facilities on both campuses.

Both libraries provide an assortment of services, including reference assistance from professional librarians, library orientation tours and bibliographic instruction, and self-service photocopies.

Customized bibliographies can be produced through the bibliographic search service. Search analysts work with clients to define research topics, determine proper search criteria, and select the most appropriate of the 500 available databases.

The online catalog links the libraries on both campuses and enables patrons to determine the status of library materials. Through interlibrary loan, students may borrow books from public and academic libraries throughout the United States.

Recognizing their needs for advanced research

and greater access to materials, ULS offers graduate students special research privileges, including circulation of bound journals and browsing privileges in the current periodicals area. The staff of Collection Management works with faculty and graduate students to select journals and purchase other library materials.

James Branch Cabell Library's growing collections support the programs of the Academic Campus and also contain a significant number of health science materials. More than 610,000 volumes and over 6,100 journal titles are housed in the five-story building at the heart of the Academic Campus. ULS is designated as a partial depository for U.S. Government documents and as an official U.S. Patent Depository. Cabell Library specializes in providing assistance to the visually handicapped.

The comprehensive collections of Tompkins-McCaw Library support the University's teaching and research needs in the health sciences and include more than 247,000 volumes and over 3,400 journals. Tompkins-McCaw Library is a designated resource library for the southeastern states in the Regional Medical Library System.

Media Production Services, located in Sanger Hall on the MCV Campus, offers medical illustration, graphic art, photography, and instructional design services.

The three learning resource centers contain nonprint materials such as records, tapes, microscopes, posters, and filmstrips. The Cabell LRC houses materials helpful to students in the Academic Campus curriculum, while the two learning resource centers on the MCV Campus are related to the health sciences curriculum.

ULS is a member of the Center for Research Libraries, the Richmond Area Library Cooperative, the Association of Southeastern Research Libraries, the Richmond Area Film/Video Cooperative, and the Southeast Library Network.

SUPPORT SERVICES

Division of Animal Resources

The Division of Animal Resources maintains centralized services for the procurement and care of all vertebrate animals. A staff of veterinarians and other trained personnel provide day-to-day care and are available to assist faculty, staff, and students. The facilities are accredited by the American Association for Accreditation of Laboratory Animal Care, which certifies that care and treatment meet the most rigid standards, and are also regularly inspected by

veterinarians from the U.S. Department of Agriculture.

Housing for small animals is available in quarters conveniently located near departments and at a large central holding area in Sanger Hall. There is also a 90-acre farm for large animals and for holding animals for long-term experiments or conditioning.

Central Biomedical Engineering Facility

Well-equipped mechanical and electronic shops for the construction and repair of mechanical and electronic instrumentation are located in Sanger Hall.

Academic Computing

Academic Computing provides computing support for the research and instructional endeavors of its faculty, students, and staff. Its services include consulting help in the use of University resources, teaching short courses, advice on the acquisition of computer systems, and operation of local computer facilities. A variety of other services, including a test-grading service, are provided to support micro-, mini-, and mainframe computing. Academic Computing on the MCV Campus reports to the Office of the Vice-President for Health Sciences.

On the MCV Campus, a VAXcluster (VMS) consisting of a VAX 6420, VAX 8650 and VAXstation 3100 provides interactive computing to public and private terminals around the campus. An extensive variety of programming languages and software packages for data analysis and management, statistics, graphics, molecular modeling, and networking is available. The DECnet local area network connects the VAX-cluster to other DEC computers on the campus. An IDX-3000 Network Switch provides access to the centralized, as well as departmentally owned, computing resources. The VAXcluster is connected to BITNET and the Internet, which allows communication to other institutions throughout the nation and abroad. In addition, the University Computer Center, administered by the Office of Computing and Communications Services, provides computer utility services on an IBM 3081K mainframe (MVS/XA) system for academic and administrative functions of the University. These services include TSO, WYLBUR, and CICS on-line systems and batch job processing. Public access to these systems and to microcomputer (personal computer)

systems is available at the academic computing facility located on the B-3 level of Sanger Hall.

FACILITIES—ACADEMIC

Sanger Hall is located on East Marshall Street between Eleventh and Twelfth Streets and extends along Eleventh Street to Broad Street. Named in honor of Dr. William T. Sanger, third president of MCV, Sanger Hall houses the teaching headquarters for the clinical medical faculty and the basic health science departments and research laboratories.

The **Nursing Education Building**, originally a dormitory for nurses, provides administrative offices and classrooms for the Schools of Nursing and Allied Health Professions.

Randolph-Minor Annex is a former church building which provides teaching facilities for the Departments of Health Administration and Medical Technology.

The **Egyptian Building**, designed by Thomas Stewart of Philadelphia, was the first building owned by the Medical College of Virginia. Completed in 1845, it is considered one of the purest examples of Egyptian architecture in the United States. Offices for continuing medical education, administrative offices of the School of Allied Health Professions, faculty offices of the Departments of Psychiatry and of Rehabilitation Medicine of the School of Medicine, seminar rooms, and the Baruch Auditorium (with a seating capacity of about 300) are housed in this building located at the corner of College and East Marshall Streets.

The **Robert Blackwell Smith, Jr., Building**, located at Twelfth and Clay Streets was completed in 1984 and provides teaching and research facilities for the School of Pharmacy and the Department of Pharmacology and Toxicology of the School of Basic Health Sciences.

McGuire Hall and **McGuire Annex** are named for Dr. Hunter Holmes McGuire, founder of the University College of Medicine which consolidated with MCV in 1913.

Located on the north side of Clay Street between Eleventh and Twelfth Streets, these adjoining buildings once housed the School of Pharmacy and now provide research facilities primarily for the Biotechnology Institute of the Center for Innovative Technology, the Department of Pharmacology and Toxicology and the Program in Biomedical Engineering of the School of Basic Health Sciences, and the School of Medicine. The Department of Physical Ther-

apy of the School of Allied Health Professions is located on the second floor.

The MCV Campus branch of the **VCU Bookstore** is located in the basement of McGuire Hall.

The **Wood Memorial Building** and the **Lyons Building**, named in honor of Dr. and Mrs. Jud B. Wood and Dr. Harry Lyons, dean of the School of Dentistry from 1951 until 1970, house the School of Dentistry. These adjoining buildings are located on Eleventh and Twelfth Streets, respectively, just north of McGuire Hall.

The **Lewis L. Strauss Research Laboratory** accommodates a number of important research projects of the Department of Pharmacology and Toxicology and the Program in Biomedical Engineering. It is located next to the Tompkins-McCaw Library on North Twelfth Street.

The **Stephen and Samuel Putney Houses** are historic landmarks and have been restored to their original nineteenth-century designs. The Stephen Putney House located at 1012 East Marshall Street provides administrative offices for the vice-president for health sciences and the Medical College of Virginia Foundation. The Samuel Putney House at 1010 East Marshall Street houses the offices of the University Legal Advisor and certain offices and activities of the Department of Gerontology, School of Allied Health Professions.

The **VMI Building**, formerly the Virginia Mechanics Institute, is located at the corner of Tenth and Marshall Streets and houses a variety of activities and programs. Among these are the offices and laboratories of the Department of Occupational Therapy of the School of Allied Health Professions, the office of the Center for Educational Development and Faculty Resources, offices of the University Human Resources Division, MCVH Social Work offices, MCVH Quality Assurance Program, and MCV Campus Parking Office. The campus post office is located on the ground floor of this building.

The four **residence halls** located at Tenth and Leigh Streets provide offices for student life and student services personnel in addition to living quarters for students. They are named **Warner Hall**, **Bear Hall**, **Rudd Hall**, and **McRae Hall**.

Cabaniss Hall is a 432-bed dormitory located southwest of the Jonah L. Larrick Student Center.

The **Jonah L. Larrick Student Center** is named for the former director of YMCA activities at MCV. On the first floor are the cafeteria and a smaller dining room for special events. The

second floor houses a large lounge and exhibit area with smaller rooms for TV viewing, music listening, piano playing, games and activities, offices, and meetings.

Adjacent to the student center is the **MCV Gymnasium** with extensive facilities for intramurals, recreation, and physical fitness.

Hunton Hall houses the offices of Student Financial Aid, the University Counseling Center, a student study area and the Computer-Based Instructional Laboratory of the School of Medicine, a printing facility, and the Campus Room restaurant.

In addition to the major buildings, a number of smaller structures house various departments of the institution.

MEDICAL COLLEGE OF VIRGINIA HOSPITALS

The Medical College of Virginia Hospitals is one of the largest university-owned teaching hospitals in the nation, with a licensed capacity of 1,058 beds. While providing primary and secondary care to the Richmond metropolitan area, the hospitals serve as a Level I Trauma Center and a tertiary care referral center for the Southeastern United States. Annual inpatient admissions approximate 33,000, and the emergency room has over 100,000 visits a year. The hospitals also operate an extensive array of general and subspecialty clinics in which nearly 160,000 patient visits occur annually.

The patient care operations in the hospitals and clinics provide the major clinical resources and setting for the clinical teaching programs of the MCV Campus schools. This clinical exposure is enhanced further and diversified through an affiliation with the McGuire Veterans Administration Medical Center in Richmond and several other hospitals in the Richmond area and throughout the state.

Patient care activities are conducted in eight buildings on the MCV Campus. The recently constructed Main Hospital accommodates more than one half of the institution's beds and includes the operating and recovery rooms, the labor and delivery suite, the adult, pediatric, and newborn intensive care units, the emergency departments, and the diagnostic radiology division. The balance of the institution's beds are located in the newly renovated North Hospital. The West Hospital building houses the Clinical Research Center and various academic and hospital support activities. Most of the outpa-

tient clinics are located in the A.D. Williams Clinic Building and Randolph-Minor Hall. Several clinics also are located in the Ambulatory Care Center, which provides ambulatory surgery, and in the Nelson Clinic, where faculty practice offices are maintained. Radiation therapy services are provided in the Massey Cancer Center.

MCV Hospitals has completed its current plan for replacement and modernization of its inpatient facilities. An additional ambulatory care facility is in the planning stage and should provide nearly 100,000 square feet of new clinical space in the early 1990s. A three-floor addition to the Clinical Support Center for dietary and clinical laboratory activities was completed in 1984, and North Hospital, which has undergone complete renovation, including the addition of a new 10-story bed tower, was occupied in the fall of 1986. A generous private donation has provided for the Sophia and Nathan Gumenick Suites. These provide a luxurious environment and special service to those patients who prefer a nontraditional hospital setting while receiving state-of-the-art medical care.

Endowment, Resources, Support, and Research

Although VCU is a state-supported institution, it is indebted to many friends for generous gifts and bequests that are vital to the successful performance of its mission in education, service, and research.

While Virginia Commonwealth University is one of the leaders in teaching among the institutions of higher education in the state, it is also an institution which commits a significant portion of its resources to research and scholarly activities. VCU is fully committed to the proposition that a broad-based program of research investigations enhances the teaching mission of the University while, at the same time, it improves the quality of services provided to the community. During the fiscal year ending on June 30, 1989, the University received over \$63.6 million, of which more than \$53.2 million was received on the MCV Campus, in sponsored program support from a variety of public and private organizations. The extensive and diverse nature of the University's research programs is directly related to the excellence of the faculty on both campuses.

MCV FOUNDATION

The Medical College of Virginia Foundation was established as a not-for-profit corporation in 1949 with its express purpose being to aid, strengthen, and extend in every proper and useful manner, the work, service, and objectives of the Medical College of Virginia.

The MCV Foundation Board consists of 22 trustees, nine honorary trustees, and three ex-officio trustees. The bylaws of the foundation specify that the board must consist of at least three alumni of MCV, one member of the VCU Board of Visitors, and one faculty member from the MCV Campus.

The MCV Foundation is tax exempt under §501(c)(3) of the IRS Code, and all lifetime gifts and bequests are tax deductible to the extent allowed by law. It has been negotiated with the University administration that the foundation can directly receive gifts for the MCV Campus both for current needs as well as for endowment.

For the fiscal year 1989-90, the foundation provided \$1.7 million from endowment income for support of programs in the MCV Campus schools and hospitals.

The foundation offices are located in the Stephen Putney House at 1012 East Marshall Street. All correspondence should be mailed to the Executive Vice President, Medical College of Virginia Foundation, Richmond, VA 23298-0234.

A.D. WILLIAMS FUNDS

The estate of A.D. Williams, left in trust, provides an appreciable income each year to MCV. These funds are used in support of student scholarships, predoctoral fellowships (graduate students), summer student research fellowships, postdoctoral awards to visiting distinguished scholars, and faculty stipends to MCV faculty members advancing their training. A portion of these funds is also used for research grants to MCV faculty members. Funds made available from this trust are administered by a committee appointed by the vice-president for health sciences. Use of some of these funds is based upon the recommendations of the A.D. Williams Advisory Committee.

A.D. WILLIAMS AWARD

An annual award may be made, on the nomination of the faculty, to a student in each class of the degree programs who demonstrates by virtue

of high scholastic attainment and professional performance, unusual promise and ability.

ENDOWED CHAIRS AND PROFESSORSHIPS

Endowed professorships have been established in honor of individuals who have played vital roles in the development of the Medical College of Virginia:

Arthur McGuire Glasgow Professorship of Hospital Administration. This professorship was established in 1957 in honor of Doctor Glasgow, who provided so generously in his will for MCV, and who had shown such a vital interest in hospitals.

Stuart McGuire Chair of Surgery. This professorship was established in 1959 in honor of Dr. Stuart McGuire, who was president of the University College of Medicine when it was consolidated with the Medical College of Virginia in 1913, and who was successively professor of surgery, dean, president, and chairman of the Board of Visitors of the combined institutions. Doctor McGuire died in 1948. His wife, Mrs. Ruth Robertson McGuire, died in 1963. The bulk of their estates was bequeathed to MCV to be used for the Department of Surgery.

William Branch Porter Professorship of Internal Medicine. This professorship was established in 1959 in honor of Doctor Porter, who was chairman of the Department of Medicine from 1927 to 1956 when illness forced his retirement. He died October 6, 1960, leaving his entire estate to the MCV Foundation for use of the Department of Medicine.

Harvey B. and Gladys V. Haag Professorship of Pharmacology. Established in 1963, this professorship honors Dr. Harvey Bernhardt Haag and his wife, Mrs. Gladys Vaden Haag. Doctor Haag, who died in 1961, joined the College faculty in 1923 and was promoted to professor and chairman of the Department of Pharmacology in 1933. He also served as dean of the School of Medicine from 1947 to 1951. At Mrs. Haag's death in 1962, the bulk of their joint estate came to the MCV Foundation for support of the Department of Pharmacology.

Norborne F. Muir Chair of Orthodontics. Established in 1974, this chair honors Dr. Norborne F. Muir, who in his will generously provided a bequest to the MCV Foundation to establish a chair of orthodontics in the School of Dentistry. Doctor Muir, who died in 1974, graduated from the School of Dentistry of the

Medical College of Virginia in 1918 and practiced dentistry all of his professional life in Roanoke, Virginia.

Leroy Smith Professorship in Plastic and Reconstructive Surgery. Established in honor of Dr. Smith, who in 1947 became the first board-certified plastic surgeon in Richmond. Dr. Smith established the field of plastic and reconstructive surgery at Children's Hospital and the Medical College of Virginia and was for many years its sole practitioner at both institutions.

Jesse Ball duPont Chair in Pediatrics. Established in 1985, this endowed chair honors Jesse Ball duPont through a gift to the University from the Alfred I. duPont Living Trust.

W. Taliaferro Thompson Professorship in Pulmonary Medicine. Established in 1986 through gifts and pledges to the MCV Foundation by colleagues, friends, and former students in honor of Dr. Thompson, an alumnus of the medical class of 1938. From 1959 to 1973, Dr. Thompson served as the William Branch Porter Chairman of the Department of Medicine.

Elam Toone Professorship of Internal Medicine. Established in 1986, this professorship honors Dr. Elam C. Toone, emeritus professor of internal medicine and an internationally recognized leader in arthritis research and treatment. Doctor Toone, whose teaching career and many contributions to the institution span more than 50 years, founded the Arthritis Clinic at the Medical College of Virginia in 1938. The endowment for the Toone professorship was funded with gifts and pledges provided to the MCV Foundation by colleagues, friends, former students, and patients of Doctor Toone.

E. Claiborne Robins Professorship in Pharmacy. Established in 1987 by E. Claiborne Robins, Sr., to attract and retain prestigious scholars in research and teaching in the School of Pharmacy.

Charles M. Caravati Professorship in Gastroenterology. Established by gifts and pledges to the MCV Foundation by colleagues, friends and former students to honor the work and dedicated service of Dr. Caravati, who brought the study and practice of gastroenterology to the Medical College of Virginia. Dr. Caravati was one of the founding trustees of the MCV Foundation in 1949 and served as assistant dean of continuing education in the School of Medicine from 1966 until his retirement in 1973.

Edward S. and Elizabeth W. Hirschler Professorship in Neurosurgery. Established in 1988

to help the efforts in learning more about mechanisms and treatment of spinal cord disease.

Walter E. Lawrence, Jr. Professorship in Oncology. Established in 1988 through a gift to the MCV Foundation from the Massey Foundation in honor of the contributions of Dr. Lawrence, first director of the Massey Cancer Center.

Charles W. Thomas Professorship in Rheumatology. Established in 1988 by Mrs. Evelyn F. Thomas in honor of her husband. Dr. Thomas, a 1903 graduate of the School of Medicine, and his wife were the most generous benefactors in the University's history. Before his death in 1964, Dr. Thomas suffered from debilitating arthritis. The Thomas Professorship supports research for causes and treatment of rheumatoid arthritis.

Taliaferro/Scott Professorship in Internal Medicine. Established in 1989 by Mrs. Thomas B. Scott, Jr. in memory of her husband, Thomas Branch Scott, Jr., her grandfather, Horace Dade Taliaferro, M.D., her sister, Lucy Nelson Taliaferro, and in honor of herself, Carrie Triplett Taliaferro Scott. The Taliaferro/Scott Professorship is appointed at the discretion of the Chairman of Internal Medicine to attract prestigious scholars in research, teaching, and patient care in the field of internal medicine.

Rachel Brown Banks Professorship of Psychiatry. Established in 1990 to enhance research in the field of affective disorders in the Department of Psychiatry.

HONOR SOCIETIES

Students who excel in scholarship and leadership may be eligible for membership in honor societies related to their fields of study. In addition, students who meet established criteria may be elected to one or more of the following societies:

Phi Kappa Phi is a national honor society which recognizes and encourages superior scholarship. It accepts members from applied and professional fields of study, as well as from letters, arts, sciences, and humanities. The VCU chapter was installed in 1977.

Sigma Xi Society is a national honor society founded for the encouragement of research in science and recognizes individuals for research achievement or promise.

Alpha Sigma Chi is an MCV Campus organization which was founded in 1938. It recognizes those individuals who excel in leadership and service to colleagues, school, and the University.

Sigma Zeta is an honorary science fraternity which encourages and fosters knowledge of the sciences and recognizes attainment of high scholarship in the sciences. Gamma Chapter was installed at MCV in 1926.

Certificate Training Programs

A training program in EEG technology and a dietetic internship are available. Persons completing these programs receive certificates of training and may qualify to take appropriate certification examinations. Additional information for either of these programs may be obtained by writing to the appropriate program director.

Electroencephalographic (EEG) Technology—Program Director, EEG Technology Program, Department of Neurology, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA 23298-0453.

The Dietetic Internship—Director of the Dietetic Internship, MCV Hospitals, Virginia Commonwealth University, Richmond, VA 23298-0294.

Student Life and Services

HOUSING FACILITIES

Dormitories with a capacity for 780 students are located in the northwest corner of the MCV Campus.

Rooms are furnished with beds, mattresses, study desks, chairs, and either chests-of-drawers or bureaus. Janitorial service is provided. The residence hall staff personally supervises all students.

Students and members of the housestaff may obtain assistance from the Housing Office in locating accommodations off campus.

Housing information and applications will be sent to all students as they are accepted for admission to the university. Requests for additional housing information should be made to the Director of University Housing, Virginia Commonwealth University, 711 West Main Street, Apt. 103, Richmond, VA 23284-2517.

Dormitory room assignments are made for the period of an academic year, which normally is two semesters.

When students are required to remain beyond the usual year, rentals will be charged on a

prorated monthly basis. Reservations are made in advance for the full period or for such part of the period as may be approved specifically by the Housing Office.

A current rate schedule is available upon request from the Housing Office. Rent is payable in advance by the semester, and refunds will be made only in accordance with the University policy as stated in the University's bulletins and housing contract.

STUDENT CENTER

The Jonah L. Larrick Student Center is a unique circular building consisting of two levels:

Lower Level—Dining Facilities: A cafeteria provides food on a contractual basis for students living in the dormitories and for off-campus students who elect to be on the meal plan. This contract will provide three meals each day, *except Sundays, when two meals are served*. The contract covers only the days that the MCV Campus is officially open as shown by the calendar in this bulletin. Students may select from several weekly meal plans. Students who remain after holidays and vacations begin, or who begin classes before the official dates shown, are able to purchase meals in one of the campus food facilities on an *a la carte* basis. A current contract price schedule is available upon request from the Office of Business Services or the Housing Office. This cafeteria is used on a limited basis by faculty and staff when it does not conflict with the student schedule.

There is a small private dining room which may be reserved for private luncheons and dinner meetings. Arrangements to use this room, as well as for catering for social functions, are made through the manager of food services.

Upper Level—Activities Area: A variety of activities and social opportunities are offered to students through the Larrick Student Center. A large lounge in the center is surrounded by smaller rooms. The lounge area accommodates up to 375 people for dances, social mixers, lectures, etc. The walls are lighted and equipped for hanging art exhibits. The smaller rooms include offices of the student center manager, the MCV Student Government and Honor Council, *The X-Ray* (MCV Campus yearbook), and two conference rooms which accommodate up to 50 people.

There are rooms for pool and table tennis, as well as cards, chess, piano playing, and record listening.

The Student Center Board, comprised of students, faculty, and administration, determines policies, procedures, and programs for the Larrick Student Center and helps to identify student interests and needs.

Reservations for use of the activities area should be made through the office of the Larrick Student Center manager.

UNIVERSITY STUDENT HEALTH SERVICES

Betty Anne Johnson, M.D., Ph.D., Director
David W. Nelson, M.D., Assistant Medical Director
Lynne Clemo, M.D., Assistant Medical Director
Betty R. Reppert, PA-C, Assistant Director for Health Education

The University Student Health Services (USHS) offer quality primary health care for the treatment of acute and chronic illness. In addition to diagnosis and treatment, the service emphasizes prevention of illness through screening, counseling, and health education. Full-time students are required to participate and pay the student health fee. Part-time students may elect to participate in the service but must pay the full student health fee.

The service is staffed by physicians, physician assistants, nurse practitioners, registered nurses, pharmacists, and health educators.

Services offered by the Student Health Services include general medical, allergy, gynecology clinics, pharmacy and laboratory services, after-hours emergency care, and health education and public health programs.

All educational activities sponsored by USHS are available to students, including educational literature, video cassettes, weight-reduction classes, and health-related programs on topics of interest to students.

Accidental injury and hospitalization are not covered by USHS, and students are urged to take advantage of the University-sponsored health plan. Information on this insurance program, which provides benefits to students at group rates, may be requested from USHS.

Virginia law requires all full-time students to submit an immunization record prior to enrollment for the first time at VCU. The immunization record is included in the health history form mailed to students from University Enrollment Services and should be sent to the Immunization Coordinator, University Student Health Services, Virginia Commonwealth University, 711 West Main Street, Richmond, VA 23284-2022.

For further information see the description of immunization requirements in the section of this bulletin entitled "Admission Requirements."

The USHS office on the Academic Campus is located in Suite 159, Gladding Residence Center, 711 West Main Street. The USHS office on the MCV Campus is located on the second floor of the A.D. Williams Clinic at 1201 East Marshall Street. For information call (804) 367-1212 (Academic Campus) or (804) 786-9212 (MCV Campus).

POSTAL SERVICE

All mail should be addressed to Virginia Commonwealth University, MCV Station Box _____, Richmond, VA 23298-_____ (both the box number and the departmental nine-digit ZIP code must be included). MCV Station, a contract branch of the United States Postal Service, is located in the VMI Building, 1000 East Marshall Street, and offers the usual business conducted in an official post office. Window service is offered Monday through Friday from 8 am to 4 pm.

All dormitory residents have only dormitory mail boxes, and their mail should be addressed as follows:

Cabaniss Hall:

[Name]

[Room no.] Cabaniss Hall
Richmond, VA 23298-8000

Bear, McRae, Rudd, or Warner Hall:

[Name]

[Room no.] _____ Hall
Richmond, VA 23298-7000

Students living off campus should have mail delivered to their local addresses.

Students in some programs are assigned mailboxes at the MCV Station for the convenience of the university and are so notified by their respective schools.

For additional information call University Mail Services at (804) 786-0579 or (804) 225-3868.

THE STUDENT BODY ORGANIZATION

The student body organization on the MCV Campus was formed to promote college activities; to promote a concern among students for each other and a greater identification with the University; to express a unified voice in matters which affect the best interests of the student body; and to foster a constructive relationship

between the University and the community and state.

The student body on the MCV Campus operates through the Student Government Association (SGA). Representatives are elected from each class of the health science schools on the basis of one representative per 40 students.

SGA meetings are held monthly from September through April, except December, and are open to all MCV Campus students. In 1989-90, the SGA had an operating budget of almost \$70,000 through which the yearbook and numerous social activities were funded. The association sponsors blood drives, University Guest Day, and other community projects. The SGA provides a forum for discussion of student ideas and suggestions and serves as a means for initiating innovative changes in campus life. In recent years, the SGA has addressed some issues with officials at the state and local levels as well as top University administrators.

HONOR CODE

The student body organization, believing that self-government in college is fitting preparation for self-government in life following graduation, conducts its affairs by means of an honor system under which every student is assumed to be trustworthy and unwilling to do anything dishonest or dishonorable. The honor system was inaugurated by students during the academic year 1895-1896; and while procedures have been modified, the essential spirit of the system remains unchanged.

Any student failing to live up to the principles of the honor system by lying, cheating, or stealing is subject to punishment by the Honor Council which is elected by the student body. All students must support the Honor Code and report infringements thereon to their Honor Council representative. The following pledge applies to all examinations unless otherwise stated by the instructor: "On my honor, I have neither given nor received aid on this examination, quiz, or test." Each student, as a condition of matriculation at the MCV Campus of Virginia Commonwealth University, agrees to abide by and uphold the Honor Code. A detailed description of the Honor Council's rules and procedures is available upon request to the Office of Student Government.

Students who are not enrolled in a formal program in one of the schools on the MCV

14 General Information

Campus, but take courses on the MCV Campus, are expected to abide by the Honor Code.

EXTRACURRICULAR ACTIVITIES

See information under **Student Center**.

MCV Campus Gymnasium and Intramural Athletics.

The two MCV Campus gymnasiums offer a full recreational program for students, houses-taff, faculty, and employee gym members. Membership for all except MCV Campus students is on a fee basis. Membership information may be obtained through the director's office by calling (804) 786-0437. The gym facilities include four basketball courts, three volleyball courts, two indoor tennis courts, four handball-racquetball courts, and two squash courts. In addition, there are two weight rooms, an exercise room, a multipurpose room, a training room, and locker-shower rooms for men and women students and men and women faculty. Equipment may be checked out for basketball, football, volleyball, and racquetball. Special equipment for boxing, gymnastics, karate, exercise, picnics, and camping is also available.

MCV students and faculty may use the University swimming pool located in the Franklin Street Gymnasium on the Academic Campus. ID cards are required.

An extensive intramural program is offered to men and women students and housestaff. Team sports include flag football, basketball, coed two-person basketball, coed and men and women's volleyball, slow-pitch softball, and cross-country. Individual tournaments are held in tennis, racquetball, squash, table tennis, billiards, badminton, weight lifting, wrestling, one-on-one basketball, and basketball free-throw. Additional information may be obtained by calling the director's office.

Club sports include rugby, soccer, tennis, karate, and fencing. Karate, self-defense classes, and aerobic exercise classes are held in the MCV Campus gymnasium. Various elective classes are offered for credit to men and women through the Department of Physical Education on the Academic Campus.

CULTURAL OPPORTUNITIES IN RICHMOND

The student affairs offices assist in planning extracurricular activities for the intellectual,

cultural, religious, and recreational life of students.

The resources of the Virginia State Library as well as those of the Richmond Public Library, located a few blocks from both campuses, are available.

Near the MCV Campus is the Valentine Museum, with its excellent historical displays of early Richmond, and the White House of the Confederacy with memorabilia of the Civil War.

Students have the opportunity to purchase season tickets to programs at the Virginia Museum of Fine Arts. These include chamber music, theatre, outstanding films of the past, and ballet, as well as fine art exhibits.

The Richmond Symphony and the Richmond Sinfonia are the recipients of enthusiastic support of music critics and the public alike.

Various dinner theaters in the area, as well as the Performing Arts Center on the University's Academic Campus, provide delightful evening entertainment.

The 12,176-seat Richmond Coliseum, which serves as the home court of the University's basketball team, is located west of the MCV Campus. The coliseum programs include sports events, spectaculars, circuses, musical groups, and various other stage events.

ALUMNI OF THE UNIVERSITY

VCU has more than 78,000 alumni of whom over 23,000 are graduates of MCV. These alumni live in each of the states and 49 foreign countries. The Alumni Activities Office is the focal point for alumni planning and events and serves as a resource center for those who studied here.

Through the annual fund and the new \$52,000,000 capital campaign, alumni have the opportunity to support the various schools and departments in the University. Such support provides resources for state-of-the-art equipment, funds for the finest faculty, and aid for fellowships and scholarships.

The Medical College of Virginia Alumni Association of Virginia Commonwealth University, organized March 28, 1889, and incorporated in 1943, has continuously played an important role in creating support for the institution. The MCV Alumni Association currently is housed on the 16th floor, west wing, of the West Hospital Building while the campaign continues to raise the necessary funds to relocate and renovate the Alumni House (also known as the Maupin-Maury House).

The University alumni associations and their individual school divisions, in cooperation with the Advancement Division and its Office of Alumni Activities, provide programs for alumni involvement and information about the University's future growth.

Inquiries about alumni activities should be addressed to the VCU Alumni Activities Office, 828 West Franklin Street, Richmond, VA 23284-2026, (804) 367-1227.

Admission Regulations

The Medical College of Virginia of Virginia Commonwealth University does not limit applications to residents of Virginia; however, priority is given to those who are legal residents. Candidates are considered without regard to race, creed, sex, or national origin. For detailed information regarding admission requirements and procedures, refer to the appropriate school sections of this bulletin.

IMMUNIZATION REQUIREMENTS

In accordance with state law, Virginia Commonwealth University requires that all full-time students have a completed and validated immunization record on file at University Student Health Services.

Immunity to tetanus, diphtheria, mumps, rubella (German measles), and rubeola (measles) must be documented as specified on the forms supplied by the UES/Admissions office. In lieu of the measles and rubella vaccines, a blood test demonstrating immunity to those diseases is also acceptable.

Students may obtain their immunization histories from the schools they attended, military records, health department and clinic records, and their private physicians. If immunization records cannot be obtained, the student must receive the required immunizations. Students previously admitted to university programs who may have submitted an immunization record to University Student Health Services within the past five years must so notify the USHS office.

If immunization certification forms are not completed according to the above requirements and copies of all supporting documents received, computer holds will be placed on students' academic records and they will not be permitted to register for subsequent semesters at the University.

Immunization certification forms should be

mailed to the Immunization Coordinator, University Student Health Services, Virginia Commonwealth University, 711 West Main Street, Richmond, VA 23284-2022.

For further information, contact the Immunization Coordinator at (804) 367-1212 or either University Student Health Services office at (804) 786-9212 (MCV Campus) or (804) 367-1212 (Academic Campus).

MINORITY APPLICANTS

Applicants from minorities underrepresented in the health sciences are encouraged to contact the Office of the Health Careers Opportunity Program, Virginia Commonwealth University, Richmond, VA 23298-0549.

INTERNATIONAL STUDENTS AND VISITORS

The University encourages qualified international students, both immigrant and nonimmigrant, to seek admission to VCU. Complete information and application materials for international applicants may be obtained from UES/Admissions-International, Virginia Commonwealth University, Richmond, VA, USA 23284-2526.

English Language Proficiency Requirement. To ensure maximum benefit from academic study at VCU, all non-native English-speaking applicants, regardless of immigration status, must provide evidence of English language proficiency prior to admission and/or prior to enrollment in the University as a degree-seeking student.

Evidence of English language proficiency will be evaluated based on factors such as length of stay in the United States, amount and type of formal U.S. education, and Test of English as a Foreign Language (TOEFL) and other standardized test scores. The University reserves the right to require additional testing and remedial study in the VCU English Language Program.

Nonimmigrants (Students with temporary U.S. visas). Due to the time constraints involved in processing applications from international students and in obtaining visas, prospective students should apply well in advance of the international application deadlines. The deadlines are April 1 for fall semester, October 1 for spring semester, and February 1 for summer sessions. Students must meet specific program

deadlines, if earlier. All required admission documents must be submitted no later than eight weeks prior to registration if appropriate immigration documents are to be issued. Applicants who are unable to meet this credential deadline will need to defer their intended term of entry.

Both U.S. government regulations and VCU admission policies require nonimmigrant applicants to demonstrate

1. satisfactory academic achievement
2. adequate English language proficiency as described above
3. ability to finance all educational and living expenses

Refer to University and program admission requirements in this bulletin for other information requested of all applicants.

Applicants must submit academic records which demonstrate successful completion of education in their home countries. Normally, the University has no financial resources for international students. Therefore, applicants who need a student (F-1) visa or a visiting scholar (J-1) visa also must present documented evidence of available financial support to cover annual living and educational expenses for the entire period of their stay without resorting to employment while in the United States.

U.S. Immigration and Naturalization Service regulations usually do not allow nonimmigrant students to study at VCU as special (nondegree seeking) students. The University registers international students for classes **only** if they possess current and valid visas that permit enrollment in a university. Proof of current visa type must be submitted with the application unless the applicant is requesting an F-1 or J-1 visa. F-1 students and J-1 visiting scholars admitted to VCU must submit copies of all immigration documents to the international student advisor prior to enrolling in classes.

The University maintains an Office of International Student Affairs to serve all international students and visiting scholars.

The international student advisor is available on both the academic and medical campuses to assist with personal, financial, cultural, and social adjustment matters facing international students, and help guide them within the University community so that they may pursue their academic goals successfully. The advisor will help international students maintain their non-immigrant student visa by issuing and processing

the necessary immigration documents and by interpreting relevant immigration rules and regulations.

Immigrants (permanent residents, resident aliens, and asylum applicants). Since immigrant applications usually are in the U.S. at the time an application is submitted, these students are required to meet the same application deadlines as U.S. citizens.

If educated in the U.S., immigrant applicants will be considered for admission under the same academic policies as those applicable to U.S. citizens. If immigration applicants are educated outside the U.S., the same academic records are required as those for nonimmigrant students.

The University requires detailed information concerning U.S. immigration status. Proof of permanent residency must be submitted with the admission application.

Permanent residents and other applicants who do not effectively communicate in the English language and who wish to attend VCU as special (nondegree-seeking) students are advised to begin study on an audit basis and enroll in the VCU English Language Program unless they have obtained a minimum score of 550 on the Test of English as a Foreign Language (TOEFL) or already have completed successfully one year of college-level English course work in the U.S.

Tuition, Fees, and Expenses

All tuition, fees, and other charges given in this bulletin are for 1990-91.

It is expected that students shall pay all applicable fees described in this section when due. Students failing to pay their applicable fees when due will be subject to a late payment fee.

The University reserves the right to revise or alter all charges, regulations pertaining to student tuition and fees, and collection procedures whenever such revisions or alterations are deemed necessary. Tuition and fees are not returnable except under the most unusual circumstances and then only on the recommendation of the dean concerned. See Refunds section of this bulletin.

It should be stressed that a student will incur not only those expenses for which he is billed by the school, but will, in addition, pay for clothing, books, supplies, travel, and many out-of-pocket expenses. Accordingly, each student should make allowances for such expenses in figuring

the total cost of each year at the University. Information on costs of books, uniforms, instruments, laboratory supplies, off-campus practicum, and fieldwork, etc., may be obtained by contacting the appropriate dean's office.

All charges are due and payable in full at the Student Accounting Office, 520 North Twelfth Street, Richmond, VA 23298-0010, prior to or as of registration as required and stated in each semester's billing. Students registering pay the charges indicated in the following sections, plus special fees and deposits as required. Completion of arrangements with the Office of Student Accounting for payment from accepted scholarships, loan funds, grants, or contracts shall be considered sufficient for acceptance of registration. Students are reminded, however, that they are ultimately responsible for repaying such loans in full according to the terms of the loan agreement.

No degree will be conferred upon any candidate prior to the payment of all tuition, fees, and other indebtedness to any school of the University.

APPLICATION FEE AND DEPOSITS

Application Fee: Except for the Schools of Medicine and Dentistry, each student applying for admission or readmission to the health sciences programs shall pay a \$20 nonrefundable application fee. The nonrefundable application fee is \$50 for the School of Medicine and \$35 for the School of Dentistry. This fee shall accompany the application form sent to the admissions office.

Tuition Deposit: Upon notification of appointment to the entering class, the applicant may be required to pay a tuition deposit for the first year, depending on the school. This deposit is not refunded but is applicable to first semester tuition. The deposit is refunded, however, in the case of accepted candidates to the Schools of Medicine and Dentistry who withdraw prior to the dates stipulated by those schools. Authorization to matriculate, received upon payment of a tuition deposit, constitutes an agreement for the reservation of a place in the class entering for the session cited.

Residence Hall Rent Prepayment: A rent prepayment of \$250 is required of each student completing an agreement for residence hall accommodations. This amount will be credited to the amount due for room rent for the fall semester.

Students living in the residence halls are responsible for damages to the residence halls and will be billed separately for damages.

TUITION CHARGES PER STUDENT

The tuition charges are for the academic year 1990-91. Tuition is determined both by the student's domiciliary classification and by the number of credit hours for which the student is registered. Students are reminded that the University reserves the right to revise or alter all tuition and fees, regulations pertaining to tuition and fees, and tuition and fees collection procedures whenever such revisions or alterations are deemed necessary.

Domiciliary Classification for In-State Tuition Benefits: Section 23-7 of the Code of Virginia which defines Virginia resident (domiciliary) for tuition purposes states that

"B. . . , no person in attendance at a State institution of higher education shall be entitled to reduced tuition charges unless such person is and has been domiciled in Virginia for a period of at least one year immediately prior to the commencement of the term, semester or quarter for which any such reduced tuition charge is sought.

C. A person who enrolls in any such institution while not domiciled in Virginia does not become entitled to reduced tuition charges by mere presence or residence in Virginia. In order to become so entitled, any such person must establish that, one year before the date of alleged entitlement, he or she was at least eighteen years of age or, if under the age of eighteen, was an emancipated minor, and had abandoned his or her old domicile and was present in Virginia with the unqualified intention of remaining in Virginia for the period immediately after leaving such institution and indefinitely thereafter. . . ."

F. Entitlement to reduced tuition charges must be established by convincing evidence and the burden of establishing entitlement shall be on the person claiming such entitlement."

All non-Virginia resident applicants to the University (undergraduate, graduate, professional, special nondegree) who desire in-state tuition rates as Virginia residents must complete the Application for Virginia In-State Tuition Rates. The residency determination of the applicant will be conveyed at the time of admission.

New students who have initially been classified as non-Virginians for tuition purposes may request a review of the initial residency determination by contacting University Enrollment

18 General Information

Services/Residency. This office may request that the applicant complete a Student Supplemental Application for Virginia In-State Tuition Rates and submit supporting documents for additional clarification. Continuing students desiring a change of their residency status must submit a completed Student Supplemental Application for Virginia In-State Tuition Rates with supporting documentation. Requests and applications for a second review must be submitted to the UES/Residency office by the **last** day of add/drop week for each semester. It is strongly recommended that applications be submitted by

December 1spring semester
August 1fall semester
May 1summer sessions

Students approved for a change to in-state status for tuition purposes will be notified by mail with copies of their approval letters going to UES/Financial Aid and the Office of Student Accounting. Students denied in-state tuition benefits will also be notified by mail. The denial letter will inform the student of procedures for appeal of the decision.

Special Students: A student who has been given special permission by the dean of certain schools to enroll as a special student shall pay the appropriate part-time student tuition and fees.

Summer Students: Students enrolled in certain health science programs in which full-time study extends into the summer session will be assessed additional charges for the summer program, fieldwork, or clinical affiliations as may be appropriate. All other students, graduate and undergraduate, registering for courses during the summer will pay the current semester hour credit rate of tuition as indicated below.

TUITION RATES

FULL-TIME STUDENTS—
REGULAR SESSION

Undergraduate Programs	Rate per Academic Year (Fall and Spring Semesters)	
	Resident	Non-Resident
Bachelor of Science	\$1,990	\$ 5,970
Dental Hygiene		
Health Care Management		
Health Information Management		
Medical Technology		

Occupational Therapy	\$1,990	\$ 5,970
Physical Therapy		
Radiation Sciences		
Nursing		
Pharmacy	\$2,360	\$ 5,970

Post-Baccalaureate Certificate Program		
Patient Counseling	\$ 875	\$ 1,875

Graduate Programs		
Master of Health Administration	\$2,360	\$ 5,970
Master of Science		
Doctor of Pharmacy		
Doctor of Philosophy		

Professional Programs		
Dentistry	\$5,770	\$12,000
Medicine	\$6,600	\$14,500

FULL-TIME STUDENTS—
SUMMER SESSION

	Rate per Semester Hour Credit	
	Resident	Non-Resident
All Undergraduate and Graduate Programs	\$ 995	\$ 2,985

PART-TIME STUDENTS—
REGULAR SESSION

Undergraduate Programs	Rate per Semester Hour Credit	
	Resident	Non-Resident
Pharmacy	\$ 98	\$249
All other	\$ 83	\$249
Graduate Programs	\$131	\$332

PART-TIME STUDENTS—
SUMMER SESSION

	Rate per Semester Hour Credit	
	Resident	Non-Resident
All Undergraduate and Graduate Programs	\$ 83	\$249

Graduate Study Tuition and Fees: Regularly enrolled candidates for the M.S. or Ph.D. degree in residence on a full-time basis on the MCV Campus will be charged full tuition and fees. Graduate students must register for a minimum of one semester hour during each semester that they continue as candidates for a degree. Graduate students completing a dissertation must be registered for research credit reflecting effort involved and resources consumed. The time limit

for completion of requirements is five years for the M.S. degree and seven years for the Ph.D. degree.

REQUIRED FEES

University Fee: The University fee is used by the University to support student facilities, campus development, intercollegiate athletics, and other programs. These funds are allocated annually. All full-time students are required to pay a University fee of \$575 per academic year (fall and spring semesters) and \$185 per summer session.

Part-time students are required to pay a University fee of \$24 per credit hour equivalent each semester and a \$15 per credit hour equivalent for part-time summer enrollment.

Student Health Fee: All full-time students are required to participate in the University Student Health Service and pay the student health fee of \$114. Part-time students may participate on an elective basis but must pay the full student health fee. Among services provided by the University Student Health Services are unlimited office visits for acute and chronic ailments, after-hours emergency room referrals, laboratory tests, and prescription medication for acute illness.

Student Government Association Fee: This fee supports social, cultural, and other activities for students on the MCV Campus. It is determined and assessed by the MCV Campus Student Government Association. Full-time students are required to pay a Student Government Association fee of \$28 per academic year (fall and spring semesters). Part-time students are not charged this fee.

NON-RECURRING CHARGES

Application	\$20 ¹
Condition Examination Fees	\$ 5 per examination
Identification Card Replacement....	\$ 5 each
Late Registration Fee	\$50 each
Tuition deposits required—Apply to first semester tuition.	

ROOM AND BOARD FEES

Room and board charges for the 1990-91 academic year are

Room Rent	
Cabaniss, McRae	
Double	\$2,080
Single	\$2,880

Bear, Rudd, and Warner	
Double	\$2,000
Single	\$2,540
Room Rent Prepayment	\$ 250
Meals	
Student Board Plan	
20 meals per week only	\$1,410
15 meals per week only	\$1,380
10 meals per week only	\$1,350
15-meal bonus plan	\$1,520
10-meal bonus plan	\$1,410

The fees for room rent and student board plan (meals) are payable at the time tuition and student fees are due. Housing contracts must be signed and rent prepayment paid prior to registration.

Rooms in residence halls are rented for the entire academic year (nine months). Exceptions may be made for students who complete their course of study at the end of the first semester. Only one semester's room rent is due prior to each semester.

All undergraduate students, except fifth-year pharmacy students who live in University residence halls, are required to participate in the board plan unless living in a self-sufficient apartment unit. Students who live in nonuniversity housing may subscribe to the board plan and must abide by conditions stated in the contract. Students have the option of subscribing to any one of five board plans ranging from 10 to 20 meals per week and to the extent that space is available. Food service plans for voluntary participants may be contracted on a semester basis for a full academic year.

Contracts for board (except in cases involving contracts initiated during the spring and summer terms) are for the entire academic year (nine months). Contractual agreement is implied when a student accepts university room arrangements.

For further information on student housing see section on Student Life and Services.

INSURANCE

The University is not responsible for accidents occurring to students in connection with class, laboratory, shop, fieldwork, athletics, student activities, travel, or other activities.

The University offers to its students an approved insurance plan providing substantial benefits at group rates. The insurance extends for a 12-month period beginning September 1, or from the beginning of the second semester to the next September 1, and includes coverage for accidents, hospitalization, medical, surgical, and

¹ Application fee for School of Medicine—\$50
School of Dentistry—\$35.

other benefits for illnesses. Married students may enroll spouses and children. The University strongly recommends but does not require that all students enroll in student group insurance. Additional information may be obtained by contacting the Office of Student Accounting, Virginia Commonwealth University, 327 West Main Street, Richmond, VA 23284-2506, (804) 786-2228.

REFUNDS

Students shall be entitled to refunds according to the policies outlined below. See also Financial Aid Refund policy under "Financial Aid."

Requests for Refund. Requests for refunds shall be made in writing to the VCU Office of Student Accounting, located in the basement of the Lyons Building, 520 North 12th Street, Richmond, VA 23298-0010, and will be considered on the basis of the policy statement governing the refund of tuition, room, and board. The following policy governs the refund of tuition, room, board, and applicable fees:

1. Tuition and fees will be refunded at prorated percentage rates as follows to students who withdraw from courses prior to the fourth week of the fall or spring semesters:
 - 100% refund of all tuition and fees to students who drop or withdraw from courses through the first week of classes each fall or spring semester.
 - 80% refund of tuition and the University Fee to students who withdraw from courses through the second week of classes each fall or spring semester.
 - 60% refund of tuition and the University Fee to students who withdraw from courses through the third week of classes each fall or spring semester.
 - 40% refund of tuition and the University Fee to students who withdraw from courses through the fourth week of classes each fall or spring semester.

Students who withdraw after the fourth week of the fall or spring semester are not entitled to receive a refund of tuition and fees. **NO AMOUNT WILL BE REFUNDED FOR WITHDRAWAL AFTER THE FOURTH FRIDAY AFTER THE FIRST DAY OF CLASSES FOR THE PROGRAM IN WHICH THE STUDENT IS**

ENROLLED.

2. A full refund of board plan fees will be made if withdrawal from the board plan is made prior to the first official board plan day. However, students withdrawing from the University will be granted a refund based on a weekly proration throughout the term less a \$50 administrative charge.
3. Students suspended from residence halls for disciplinary reasons are not entitled to a refund of room fees and will be responsible for the entire contract period of nine months. Students will not be entitled to a refund of room fees if they voluntarily withdraw from the University residence halls but remain registered for any course(s) at the University. Under no circumstances can students be considered for a refund unless they have completed the official withdrawal procedures.

The actual date of withdrawal will be certified by University Enrollment Services. Refunds, when appropriate, will be computed based on that certified date. *Refunds will not be made to students who do not attend classes and have not completed the required withdrawal procedure.* Refund processing can take from two to four weeks. Exceptions to this refund policy are made only in rare instances. Written application for an exception must be filed in the Office of Student Accounting to the Refund Appeals Committee. Students will be notified in writing of the University's action.

Many of the University's degree programs, especially graduate and professional programs, require clerkships or practicums as part of the curricula. Some of these activities may be provided in off-campus facilities requiring students to travel and reside some distance from Richmond. No refund of payments for tuition, fees, or other purposes may be expected by students if some form of credit toward a degree is granted for time spent in this phase of their program.

Fees are considered a normal part of the tuition package regardless of whether the student will or will not be on campus. Appeals to waive fees may be submitted by program directors, with the concurrence of deans, only for students who are assigned internships, clerkships, or practicums which run for at least two consecutive semesters. Partial waivers will not be considered and should not be requested. Crucial to a request for a waiver will be a demonstration that the student is located too far from campus to

utilize facilities or events. A rule-of-thumb would be an internship assignment located more than 100 miles from the main campus.

DISHONORED CHECKS

A charge of \$20 will be levied for all dishonored checks. If a dishonored check is not cleared within five days of notification, the student may be withdrawn from the University. Full payment must be made within one week of the date of withdrawal in order for the student to be officially reinstated. If the week expires and payment is not made, the student may not be reinstated that semester. Students withdrawn under this policy are not relieved of their financial responsibility to the University.

STATEMENT OF STUDENT FINANCIAL RESPONSIBILITY

The University will not issue a degree, transcript of grades, or grade reports to any student who has not paid all charges in full. Students whose accounts are not paid in full may not be admitted to final examinations at the end of semesters and will not be permitted to register for future classes.

A student who fails to remit payment of tuition and fees when due may be withdrawn and will not be permitted to attend classes until all accrued charges are paid and the student is officially reinstated. After one week from the date of withdrawal, a student withdrawn for failure to meet payments may not be reinstated. Notice of withdrawal will be made by the dean's office of the school in which the student is enrolled. Application for reinstatement is to be made through the office of the dean.

This policy is waived for accounts that reflect a balance supported by an authorization (scholarship or loan) on file in the Office of Student Accounting. Students are ultimately responsible for any unpaid balance on their account as a result of the sponsor canceling or reducing the award.

The University participates in Virginia's Set-off Debt Collection Act of 1981. Under the provisions of this act, an individual's Virginia income tax refund will be subject to the University's claim for any unpaid balance of tuition and fees.

LOAN REPAYMENTS

Recipients of Perkins/National Direct Stu-

dent Loans, Health Professions Student Loans (Medicine, Dentistry, Pharmacy, Nursing Student Loans), or other university loans are required to attend an "exit interview" with a representative of the Office of Loan Management (327 West Main Street, Richmond, VA 23284-2506) before withdrawal or graduation from the University. Interviews may be scheduled on an individual basis, or students may be mailed appropriate forms which must be completed and returned to the Office of Loan Management. Students who are on off-campus assignment and must be absent during the interview process are asked to call the above office, (804) 786-4538, for an appointment. Students are encouraged to call this office if they have questions concerning their rights and responsibilities under any of the loan programs.

FINANCIAL AID

Approximately one-half of the students at VCU receive some form of financial assistance from state, federal, or university funds. University Enrollment Services/Financial Aid is committed to helping students obtain need-based assistance from the aid programs which it administers. The type of assistance available to a student depends on the student's family's financial situation. Students who have questions after reading this section of the bulletin should contact University Enrollment Services/Financial Aid, Virginia Commonwealth University, 302 North Twelfth Street, Richmond, VA 23298-0244, (804) 786-0524. Students visiting the MCV Campus may wish to make an appointment with one of the professional financial aid counselors.

FINANCIAL AID PROGRAMS

University Enrollment Services/Financial Aid assists students in obtaining three types of need-based assistance:

Grants. These are awards based on financial need which do not require repayment. Students from low income families are the most eligible for grant programs. Generally, students receive grant funds in combination with loans or work-study.

Loans. Depending on the loan program, awards may or may not be based on financial need; but all loans must be repaid.

Work-Study. This program offers part-time employment as a form of assistance. Employment generally is on campus, and students are

paid weekly at the current student wage rate for the hours they work.

Financial aid award packages are combinations of grants, loans, and work-study. The total amount a student receives is based on his/her family's financial circumstances.

GRANT PROGRAMS. The following programs are awarded on the basis of a student's family's financial circumstances; no repayment is required.

College Scholarship Assistance Program offers grants to Virginia residents who are full-time, undergraduate students with financial need. The grants range from \$400 to \$2,000. Students who are not Virginia residents are encouraged to seek similar grants from their appropriate state agency.

Departmental Scholarships. Several schools and departments make scholarships available to newly admitted and currently enrolled students. Eligibility may or may not be based on financial need, and other selection criteria generally are used. Such scholarships, however, must be included in the total financial aid award made to students receiving aid through University Enrollment Services/Financial Aid. Inquiries about individual school and departmental scholarships should be directed to the appropriate dean or department chairman.

Exceptional Financial Need Scholarship, a federal program, offers scholarships to dental, medical, and pharmacy students with exceptional need. The scholarship pays for all direct college costs and allows a stipend. To be considered, parental information must be provided on the FAF.

Financial Assistance for Disadvantaged Health Professions Students, a federal scholarship, offers awards to medical students from disadvantaged backgrounds. Students must demonstrate exceptional need and come from a financially disadvantaged background. Consideration for this award requires inclusion of parental information on the FAF.

General Assembly Nursing Scholarship. The Virginia Department of Health offers assistance to full-time undergraduate and graduate nursing students who are Virginia residents through this scholarship. Awards are made on the basis of financial need and academic merit. After graduation, students agree to work one month in the Division of Public Health Nursing for every \$100 received.

National Medical Fellowships, Inc., Scholarship. This nonprofit group offers scholarships in medicine to members of minority groups. Scholarship awards are made primarily on the basis of need. Currently, the maximum first-year award is \$2,500; and the second-year award is \$1,800. Third- and fourth-year medical students are not eligible.

Pell Grant is a federal grant program for undergraduate students who are enrolled for at least six hours of course work. The maximum award from this program is \$2,300.

State Dental Practice Scholarship. Under this scholarship the state pays \$2,500 per year to dental students who agree to serve, for the number of years for which the scholarship is received, in a state department, such as Mental Health and Mental Retardation, Welfare, or Corrections, or in a designated area of need in the state.

Supplemental Educational Opportunity Grant is a federal grant program administered by VCU for students with exceptional need and limited family resources. Students must be enrolled full time. Grants from this program range from \$200 to \$4,000 per year.

U.S. Armed Forces Scholarship. The Army, Navy, and Air Force provide for up to four years of paid tuition and fees, books and supplies, and a monthly stipend of approximately \$675 in exchange for military service after graduation. Normally, the recipient serves one year on active duty for each year of scholarship, with a minimum of three years.

Virginia Undergraduate Grant is a university program of grant aid to full-time undergraduate students who are Virginia residents and who have high financial need. Awards may range from \$200 to an amount which does not exceed tuition and fees per year.

LOAN PROGRAMS. Loan funds make it possible for students and/or their families to defer the cost of education by borrowing now and repaying after the student leaves VCU. Loan programs are available to most students. The rate of interest on the loan varies according to the kind of loan for which a student is eligible as a result of his/her family's financial circumstances.

Stafford Student Loans—SSLP (formerly the Guaranteed Student Loan). Under current legislation, undergraduate students with computed financial need may borrow up to \$2,625 per year during their first two years. Juniors and

seniors may borrow up to \$4,000 per year. The loan amount, however, cannot exceed the student's computed financial need. Graduate students may borrow up to \$7,500 per year but may not borrow amounts that exceed need.

The limit on borrowing from the SSLP is \$17,250 for all undergraduate study and \$54,750 for undergraduate and graduate study combined. No repayment of interest or principal is required as long as the student is enrolled at least half time (six or more credit hours each semester for undergraduates, five or more credit hours for graduate students). Loan repayment begins six months after the student leaves school or enrolls in less than six credit hours. Repayment of an SSLP loan must be completed within ten years.

At the time the loan is approved for disbursement, it is subject to an origination fee (5 or 5.5 percent of the loan, depending on current federal regulations) and a guarantee fee (currently ranging from 0.5 percent to 3 percent).

To apply for a Stafford Loan, the student must file a Financial Aid Form. When the financial aid award package is offered, eligibility for the Stafford Loan is indicated. Detailed application procedures are outlined in the booklet, *Understanding Financial Aid*, which accompanies the award offer. The student must accept the award by signing and returning the award offer.

The Stafford Student Loan check will be issued to VCU in multiple disbursements, one-half during the fall semester and the remaining one-half during the spring semester. The Stafford Loan application process takes four to eight weeks.

Health Professions Student Loans (HPSL).

This is a joint federal and university program which permits dental, medical, and pharmacy students to borrow up to \$8,000 a year, depending on the program. Consideration for this loan requires that parental information be included on the FAF. No interest is charged or repayment required until the student leaves the University. The loan is repaid at five percent interest beginning 12 months after the student leaves VCU. Repayment must be completed within ten years; however, repayment may be deferred during periods of internship and residency.

Health Education Assistance Loan (HEAL)

is a variable-rate loan for dental, health administration, pharmacy, and medical students. Dental and medical students may borrow up to \$20,000 a year, and health administration and pharmacy students may borrow up to \$12,500 per year.

Unlike the Stafford Student Loan, no subsidy for interest payments is provided. Students must pay the going market interest rate from the date the loan is made until repayment has been completed. Deferment of interest and principal is possible during periods of enrollment.

Nursing Student Loans (NSL). This program provides funds for students enrolled in the baccalaureate and graduate nursing degree programs. Students may borrow up to \$4,000 per year to an aggregate maximum of \$13,000. The award amount is based on the student's financial need. If a student is accepted into this program and is eligible for financial aid, UES/Financial Aid will package an award from this loan program to assist in meeting the student's need. The terms of this program are similar to those for the Perkins Loan.

Perkins Loan/National Direct Student Loan.

Undergraduate students who are enrolled full time are eligible for this deferred payment loan. Students are awarded a loan amount based on the family financial information reported on the FAF. Students may not borrow more than \$4,500 during their first two undergraduate years and may not borrow more than \$9,000 for all four undergraduate years.

If a student continues at least half-time enrollment, no interest is charged nor is repayment required until the student leaves VCU. Interest of five percent a year begins six months after a student leaves school, and repayment must be completed within ten years.

Private Loan Programs. A number of private loan programs which are not need-based are available to health professions students. Students may borrow from \$2,000 to \$15,000 per year. Additional information and application forms are available from the UES/Financial Aid office on the MCV Campus, located at 302 North 12th Street.

Short-Term Loans. The short-term loan program is used to assist enrolled students with immediate financial difficulties, generally of a personal and unavoidable nature. This loan is not made to students who are attempting to offset normal educational costs. Loans normally are limited to \$200, and repayment is due within 30 days. Additional information is available from UES/Financial Aid.

Supplemental Loan for Students/Parental Loan for Undergraduate Students. Under the Supplemental Loan for Students (SLS) program, graduate students, professional students,

and independent undergraduates may borrow up to \$4,000 annually at a variable interest rate (not to exceed 12 percent) which is determined annually. (Check with University Enrollment Services/Financial Aid for the current rate.) Under the Parental Loan for Undergraduate Students (PLUS), parents of dependent students may borrow up to \$4,000 annually under the same terms. Repayment of these loans begins within 60 days. Independent students repay only the interest while they are enrolled full time.

WORK-STUDY EMPLOYMENT. All students are eligible to seek part-time employment opportunities with the University. There are two separate employment possibilities based on the student's computed financial need: assistance through the College Work-Study Program (CWSP) or employment in campus jobs paid from University funds.

The College Work-Study Program is a federally funded work program which may lessen the amount of loan assistance in a student's financial aid package. This program provides the student with the opportunity to work on either the Academic or MCV Campuses or off campus with community service employers. The Office of Career Planning & Placement assists students in finding work-study positions.

To determine a student's eligibility for work-study assistance, the student must submit the Financial Aid Form (FAF) to the College Scholarship Service. (Refer to page 25.) If the family financial information indicates that the student has computed financial need, the student may be offered employment eligibility in the College Work-Study Program as part of the aid package.

If the family financial information indicates that the student is not eligible for work-study assistance, the student may still seek regular campus jobs paid from university funds. Information about jobs is available in the Career Planning & Placement Office.

SUMMER AID. If funds are available, financial aid awards may be made for the summer sessions. Awards are made on the basis of financial information filed the previous academic year or for the new academic year. Applications and information on summer aid usually are available after April 1 in University Enrollment Services/Financial Aid.

INTERNATIONAL STUDENTS. Students who are permanent United States residents, U.S.

citizens, or attending with an immigrant visa are eligible for federal assistance programs. Other students from foreign countries should inquire about services and assistance through the International Student Services Office.

DETERMINING A STUDENT'S FINANCIAL AID PACKAGE

Before compiling a student's financial assistance package from the programs described above, University Enrollment Services/Financial Aid must assess the student's financial need and determine the student's eligibility for specific programs. To do this, University Enrollment Services/Financial Aid completes the following steps.

First, from the information provided on the Financial Aid Form (FAF), a budget is assigned that reflects factors such as the student's place of residence, and the student's academic program. The budget includes allowances for tuition, fees, room, board, transportation, books, and miscellaneous personal expenses.

Second, after using the student's financial information, University Enrollment Services/Financial Aid uses the approved Congressional Methodology for calculating a family contribution for educational expenses which reflects family income and assets as well as resources such as private scholarships, social security educational benefits, veteran benefits, etc.

Third, University Enrollment Services/Financial Aid subtracts the family contribution from the academic-year budget which applies to the student. The deficit is considered the student's financial need and is the maximum amount of aid the student can receive from need-based programs. Students with or without financial need also qualify to borrow from the Parental Loan for Undergraduate Students (PLUS) or the Supplemental Loan for Students (SLS).

If there is no financial need, the applicant may still qualify for assistance from the Parental Loan for Undergraduate Students (PLUS) or the Supplemental Loan for Students (SLS) programs or from private loan programs. (For more information on private loan programs, contact University Enrollment Services/Financial Aid.) Additionally, the applicant may seek regular campus employment even if there is no computed financial need.

Once financial need is determined, a student's application is considered initially for grant

eligibility, then for loan or work-study, depending on the preference indicated on the Financial Aid Form (FAF). Students and parents should complete their federal tax returns **before** completing the FAF. Students will be ranked in order of greatest need, and awards will be made on the basis of financial need. Additional groups of students will be awarded aid as their applications become complete.

APPLYING FOR ASSISTANCE AT VCU

To apply for financial aid consideration as a student at VCU, students should follow the steps outlined below.

1. **Complete the Financial Aid Form (FAF) of the College Scholarship Service.** This form is available after December 1 from high school counseling offices or University Enrollment Services/Financial Aid. This form should be submitted after January 1 to the College Scholarship Service (CSS) at the appropriate address with a processing fee. The Financial Aid Form should be filed immediately after the IRS form 1040 is completed. If the IRS form is not filed by April 15, the student should use estimated data to complete the FAF. However, financial aid applicants who use estimated data should expect to have their applications audited. CSS will process the financial information and forward it to VCU if the student lists VCU and code number 5570 in the box provided for this purpose.

Students transferring to VCU from another college or university must provide a financial aid transcript from each college/university attended even if financial aid was not received from the institution. No financial aid will be awarded until all financial aid transcripts have been received.

Normally financial aid notifications are mailed during the first week of June and on a weekly basis thereafter.

2. **All undergraduates should indicate on the FAF if they wish consideration for the Pell Grant Program** by checking the appropriate box on the CSS Financial Aid Form (FAF). **The College Scholarship Service will acknowledge a student's request for Pell Grant consideration** and forward the FAF information to the Pell Grant processing

center. The student will subsequently receive a Student Aid Report (SAR) indicating the eligibility (or noneligibility) for Pell Grant assistance. The student should submit the Student Aid Report (SAR) to University Enrollment Services/Financial Aid as soon as it is received. University Enrollment Services/Financial Aid will then notify the student of the amount that can be claimed against the coming year's educational costs.

3. All undergraduates should indicate their preference for the different types of assistance in the appropriate section of the FAF. Only students indicating part-time job or part-time job and loan preferences will be considered for the College Work-Study Program.
4. In all cases, University Enrollment Services/Financial Aid will attempt to meet the student's need with grant (gift) assistance. Since grant funding is limited, all applicants are encouraged to respond affirmatively to the Stafford Loan questions on the Financial Aid Form.
5. **Non-Virginia residents are encouraged to inquire about state grant funds from their state of residence.** Funds may be available even though the student attends a university outside the student's state of residence.
6. **Admission to the University is not necessary prior to applying for financial aid;** however, no assistance will be offered until a student has been accepted for admission. Students should not wait until they have been accepted for admission before filing financial aid materials.

Questions as well as requests for applications or assistance should be directed to University Enrollment Services/Financial Aid, Medical College of Virginia Campus, Virginia Commonwealth University, Richmond, VA 23298-0244.

FINANCIAL AID AND ACADEMIC REQUIREMENTS

A student's eligibility to receive funds from University, federal, and state programs depends on the number of class hours for which the student initially registers and the number completed. Since most financial aid packages are awarded on the basis of full-time enrollment costs, the student should be aware that the awards will be reevaluated if full-time study is not continued. For financial aid purposes, a full-

time academic load is a minimum of 12 hours each semester for undergraduates and for graduate and first professional students, a minimum of 9 hours each semester.

If a student is contemplating part-time study, it is advisable to talk with one of the financial aid staff members about eligibility for assistance. If a student begins the year as a full-time student and later wishes to drop to fewer than 12 hours a semester, it is advisable to see a counselor to discuss the consequences of such action.

Courses that a student audits do not count for financial aid purposes.

REASONABLE ACADEMIC PROGRESS POLICY

In order to be eligible to receive financial aid from federal, state, or institutional programs at VCU, students must make reasonable academic progress in their certificate or degree program.

The criteria for reasonable academic progress are listed below:

1. Undergraduates who have attempted fewer than 30 hours must have earned at least 70 percent of the hours attempted at VCU.
2. Undergraduates who have attempted 30 or more hours at VCU must have earned at least 80 percent of the hours they have attempted.
3. Undergraduate students who have been enrolled for more than four enrollment periods, (fall, spring, summer) must have earned a cumulative grade-point average (GPA) of 2.000 or above.
4. Graduate students must earn at least 80 percent of the 500-level or above course work that has been attempted.
5. Graduate students who have been enrolled in one or more graduate programs for more than four enrollment periods (fall, spring, summer) must have earned a cumulative 3.000 GPA or above in all 500-level and higher courses.
6. Undergraduates may receive financial aid for a period not to exceed the equivalent of 12 semesters of full-time enrollment. Graduate students may receive financial aid for a period equivalent to six semesters of full-time enrollment for the master's degree and six semesters for the doctoral degree.
7. Students who receive aid and make no progress in two successive semesters shall not have made reasonable academic

progress.

8. Medical and dental students who are required by their academic deans to repeat a year are permitted to continue on financial aid for that year.

Students whose eligibility for financial aid has been suspended for lack of reasonable academic progress may appeal the action if circumstances beyond their control prohibited them from making reasonable academic progress. The appeal must be in writing and received by the financial aid director not later than 30 days after the date on the letter of notification. Students will be notified in writing of the results of the appeal.

At the end of each academic year, reasonable academic progress status will be determined by University Enrollment Services/Financial Aid. This determination will be made during June.

REFUND POLICY

If a student withdraws from VCU during the academic term, a portion of the financial aid already claimed may have to be repaid to the University. For information on refunds refer to the "Expenses" part of this bulletin section.

VETERAN AND RESERVIST EDUCATIONAL BENEFITS

For information on eligibility to receive Veteran and Reservist Educational Assistance, students should contact the Office of Veteran Services, University Enrollment Services/Financial Aid, 901 West Franklin Street, Room 107, Richmond, VA 23284-3026, (804) 367-0977.

To receive educational benefits, eligible students must comply with the following procedures.

1. Students eligible for veteran benefits must request certification for each semester and each summer session from the Office of Veteran Services.
2. Eligible students who withdraw from VCU or who drop a course must notify University Enrollment Services and the Office of Veteran Services.
3. Benefits will not be awarded for courses taken on an audit basis. If the student is repeating a course or taking a course with no credits, this must be brought to the attention of the Office of Veteran Services.
4. All courses taken must apply to a degree program. These courses may include elective courses and prerequisite courses as well as required courses.

5. It is the responsibility of the student to see that transcripts are evaluated to determine the number of transfer credits accepted to the University and to have this information submitted to the Office of Veteran Services for transmittal to the VA Regional Office.

General Academic Regulations

ADVISING PROGRAM

Students are responsible for the proper completion of their academic program. They should be familiar with the *MCV Bulletin*, including general academic regulations and any other supplementary academic regulations presented in their individual school sections. The offices of the deans and department chairmen, in cooperation with the faculty, endeavor to follow each student's academic progress; and students are encouraged to seek counsel whenever there is a need. If an advisor is unable to resolve a problem satisfactorily, the student will be referred for further advice as is deemed appropriate and necessary.

ATTENDANCE/CONTINUANCE POLICIES

Attendance and continuance policies vary among the individual schools and may be found under the appropriate sections in this bulletin. As a general rule, class attendance requirements are announced by instructors at the first class meeting.

REGISTRATION POLICIES

Following the add/drop period no courses may be added. Students may withdraw from courses by obtaining the proper form from University Enrollment Services which must be signed by the student's advisor, department chairman, or dean. Courses dropped after the add/drop period and before the end of the first eight weeks of classes will remain a part of the student's permanent academic record and will carry the grade of "W." If a student fails to complete an add/drop form when he or she ceases to attend a class or drops a course after the end of the first eight weeks of classes, this normally results in the assignment of a failing grade in the course. A course may be dropped after the end of the first eight weeks of classes only under unusual circumstances and with approval of the department chairman and dean.

(For grade definitions, see section on grades.)

STUDENT LOAD

First-professional students (seeking M.D. or D.D.S. degrees) are always defined as full-time students unless specifically designated otherwise by the individual school dean.

In those programs where it is used, a semester credit is defined as one hour per week of lecture-recitation or not less than two hours per week of laboratory work throughout a semester.

Graduate Level

Student load is the total number of credits for which students are enrolled in any semester. Students who are fully funded as University graduate assistants with tuition remission are classified as "full-time" during any semester in which they must enroll for 12 or more credits (six during the summer if funded on a 12-month stipend.) Other graduate students, for tuition purposes, are considered full-time if they register for nine or more hours (12 credit hours during the summer).

Degree-seeking students may be either full-time or part-time, depending on program rules.

The maximum number of credits for which students may enroll in any semester without special permission is 16. More than 16 credits is an overload. Permission to enroll for more than 16 credits will be granted upon the written recommendation of the advisor to the dean of the School of Graduate Studies.

Undergraduate Level

Full-time Students. In general, students on the MCV Campus carry more than 15 credits per semester.

Part-time Students. A student is classified as "part-time" if during any semester he or she is registered for less than the number of credits specified as full-time for a given program. The term "part-time" applies to degree-seeking students as well as to nondegree-seeking ("special") students.

CANCELLATION OF REGISTRATION

A cancellation of registration must be made prior to the first day of classes by notifying in writing University Enrollment Services and the dean of the school in which the student matriculated. Refunds will be issued in accordance with

procedures set forth under the Refunds and Rebates section of this bulletin.

CHANGE IN REGISTRATION

Students registered for a planned program are expected to maintain their registration except for special reasons. Should a change of program be deemed advantageous to the student and the school by the appropriate school dean, the student may make the change during the add/drop period after the beginning of classes. Changes in registration are performed at University Enrollment Services by the following procedure:

- a. An add/drop form, obtained at University Enrollment Services, is used to add or drop courses and must be signed by the student's advisor, department chairman, or dean.
- b. Courses dropped during the add/drop period do not become part of the student's permanent academic record.

CHANGE OF MAJOR

Students wishing to change their major must apply through the regular procedures outlined in this bulletin.

Students who are currently enrolled and in good standing in a program on the MCV Campus and who wish to change to a curriculum on the Academic Campus will do so through a change of major. Such students are subject to the continuance policy of the Academic Campus in making a change of major.

WITHDRAWAL FROM THE UNIVERSITY

Voluntary withdrawals from any of the schools or programs must be approved in writing by the dean of the school in which the student is enrolled and the Office of Student Accounting; otherwise, a student will not be entitled to honorable dismissal.

Students finding it necessary to withdraw before the end of a semester must complete an official University withdrawal form obtained from University Enrollment Services.

For students officially withdrawing from the University before mid-semester (end of the eighth week), the permanent record will indicate a grade of "W" for each course being pursued.

For students withdrawing without permission, the permanent record will carry a notation, "Withdrawn Unofficially," and the grade of "F"

will be assigned for each course pursued at the time of unofficial withdrawal.

HEALTH-RELATED WITHDRAWALS

While most students on the MCV Campus are expected to work toward completion of their degrees without interruption, health-related problems may necessitate withdrawal from the University.

1. Health-related withdrawals must be approved in writing by the dean of the appropriate school.
2. The student must furnish the Office of the Dean a written request for permission to withdraw for health reasons together with a statement from his/her physician indicating the nature and severity of the condition, when the student should stop attending classes, and the estimated date of return to school.
3. In the event that the student's health problem poses a danger to the student, to patients, or to others with whom the student may come in contact and the student is unable or refuses to initiate steps to withdraw as stated in Item 2 above, administrative withdrawal of the student may be made by the dean of the school upon consultation with the appropriate faculty and a qualified physician.
4. If it is the decision of the dean to grant the withdrawal, the student will receive written notice stipulating conditions and time limits.
5. All tuition refunds or adjustments will be made in accordance with university policy as stated in this bulletin.
6. Because curricular and course content changes may occur and a student's progress toward a degree may be adversely affected due to an extended absence, specific time periods may be imposed by individual schools with respect to the length of time allowed for absence from school. If there is a delay in return beyond the allotted time period without written consent of the Office of the Dean, the student will petition for return with advanced standing. The petition will be processed according to regularly established procedures of the school.
7. Prior to return to school, the student must submit to the dean a statement from his/her physician. This statement should docu-

ment that the condition which necessitated the withdrawal has been corrected to a point where the student can successfully complete all curriculum requirements with reasonable accommodation, including classroom, laboratory, clinical, and field work experiences.

8. After the decision to readmit the student is made, the dean will inform the student in writing when he/she can resume class attendance. The student will be required to meet curricular requirements as specified by the dean.

TERMINATION OF ENROLLMENT

The University reserves the right to terminate the enrollment of any student for unlawful, disorderly, or immoral conduct, or for persistent failure to fulfill the purposes for which he or she was matriculated. Any students whose relations are so severed forfeit all rights and claims with respect to the institution.

In addition to dismissal for failure to comply with standards of conduct described in the *Rules and Procedures of the University* and the *Medical College of Virginia Honor Code*, a student enrolled in MCV/VCU may be dismissed from the school in which he is enrolled for failure to meet academic requirements prescribed by his school or failure to exhibit the attitudes and skills deemed necessary to function within his chosen professional practice. Virginia Commonwealth University recognizes its responsibilities to the health professions and to the consumer of health services. Therefore, any action by a student of MCV/VCU considered to be unprofessional conduct according to the code of ethics and the laws and regulations governing the student's chosen profession, shall constitute cause for disciplinary action.

Unprofessional conduct includes, but is not limited to

1. Fraud or deceit in gaining admission to the University, i.e., false or obviously misleading representations on the admissions application.
2. An act that violates the established legal standards regarding conduct of one person towards society, i.e., stealing, lying, cheating, and slander.
3. Conviction of a felony involving moral turpitude.

The individual health sciences schools recognize and support the statements set forth by the

licensing boards of the respective health professions as they relate to examination, licensure, and the practice of each profession. When applicable, these standards may be used in determining a student's eligibility for continuance in or readmission to the University.

DEGREE REQUIREMENTS

Candidates for degrees are eligible for graduation upon completion of their school's requirements in effect at the time of first registration, provided requirements are met within the time limit specified by the school, not to exceed a period of seven years.

The institution reserves the right, however, to require students whose programs are interrupted for any reason to meet requirements as specified by the dean or director of the program. Changes in the student's original program may be necessary when, for example, a curriculum has been revised, offerings are no longer available, significant changes in course content have occurred, or repetition of material is deemed essential to ensure continuity and clinical competence. Students failing to satisfy the time requirement shall satisfy requirements in effect at the time of readmission into the degree program.

Most of the health sciences programs include clerkships or practicums as a required part of their curricula. Some of these activities may be provided in off-campus facilities requiring students to travel and reside some distance from Richmond. As a rule, no refund of payments for tuition, fees, or other purposes may be expected by the students if credit is granted for time spent in this phase of the program.

All degrees are conferred by the VCU Board of Visitors upon recommendation of the faculties of the various schools. Degrees are granted at the close of the semester or summer session in which the students complete their work.

Candidates for degrees to be conferred at the close of the spring semester must be present to receive their degrees unless excused by the deans of their schools. No individual may be exempt from this regulation.

Graduate and Professional Degrees. Degree requirements are specifically outlined in the various school sections in this bulletin.

General Undergraduate Degrees. In addition to the course requirements indicated in the curriculum outlines, candidates for degrees are governed by the following policies:

Grade-Point Average. An overall grade-point

average (GPA) of at least 2.0 (a "C" average), except as may be specified for certain programs, is required on all work presented for either the associate or bachelor's degree.

Required Credits. The total number of semester hour credits required for graduation depends on major area of concentration and the type of degree.

Resident Requirement. Degree candidates are required to complete the last 30 credits for a bachelor's degree and the last 15 credits for an associate degree at this institution.

Double Major Concentration. A double major is the fulfillment of requirements in two majors. For further information consult the *Virginia Commonwealth University Undergraduate Bulletin*.

GRADING SYSTEM

Grade Reports. An official University grade report showing the student's standing in courses and grade-point average, when specified by the school, will be mailed each semester and at the end of the summer sessions to the student's mailing address as designated on the registration form.

Grade-Point Average. The grade-point average, reflecting semester and/or cumulative work as specified by each school, is computed by dividing the number of grade-points earned by the number of semester hours attempted for which grades "A" through "F" have been assigned. The GPA is intended to assist students in analyzing work performance and in determining areas requiring greater attention.

Grade Review Procedure. If a student feels that a grade is inaccurate, the student should discuss the grade with the instructor. This will allow the instructor to explain how the final grade was determined and, if an error is detected, to submit a change of grade. If no agreement is reached and the student feels that the grade was unfairly assigned, he or she may follow the provisions of the Grade Review Procedure which is available in each dean's office and is printed in full in the *Directory of Student Services*.

Repeated Courses. Because some schools do not allow students to repeat courses, any student planning to do so must first consult with his or her advisor, program director, or department chairman.

The semester credits attempted and the grade-points earned for all attempts are included in computing the cumulative grade-point average.

No matter how often a course is repeated, it may be counted only once as credits presented toward graduation.

GRADES

Work quality is measured by the four-point grade system with the following equivalents:

Grade Symbol and Meaning	Grade-Point Value Per Semester Credit
A	4.0
B	3.0
C	2.0
D	1.0
F	0.0
I = Incomplete	—
P = Pass	—
AU = Audit	—
W = Withdrawn	—
H = Honors	—
PR = Progress	—
CO = Continued	—
NC = Grade assigned for continuing enrollment	—
NG = Administrative grade assigned when no grade submitted by the instructor.	—

Grades designated by a blank, (—), in the grade-point column are not considered in the computation of hours attempted, hours earned, grade-points earned, or grade-point average.

I = Incomplete—The grade of incomplete is assigned when course requirements, because of circumstances beyond the student's control, cannot be met by the end of the semester. The awarding of an "Incomplete" presupposes an understanding between the instructor and the student. Routine use of the grade of "I" is discouraged.

a. With the exceptions of the Schools of Medicine and Dentistry, the maximum limit for the removal of an "Incomplete" from the permanent record card is the end of the last day of classes of the semester (or summer session) following the term in which the "Incomplete" was incurred. For programs leading to either the M.D. or D.D.S. degrees, the maximum time limit is the last day of classes of the second following semester after the semester of registration in the course or specified project. At the end of the specific semester an unremoved grade of "Incomplete" may be changed to a failing grade. Any exceptions to this regulation must be extraordinary in nature and must be approved by the dean of the school involved upon the recommendation of the instructor; a written statement must be filed with University Enrollment Services.

b. The "Incomplete" will not be computed into

the student's grade-point average.

c. **If course requirements are not completed by the end of the specified semester, a grade of "F" will be assigned.**

W = Grade of withdrawn—The grade of "W," denoting a student's withdrawal from a course, will be assigned to any course dropped after the official add/drop period but prior to the mid-semester point (the eighth Friday after the first full week of classes). For courses scheduled in block periods, the grade of "W" will be assigned if the course is dropped prior to the mid-point of the block period. The grade of "W" will appear on the student's academic record but will not be computed as work attempted or computed into the GPA.

AU = Grade of audit—Upon the approval of the student's advisor and the instructor and when class size permits, a student may register for a course on an audit basis. Audit students are charged the regular rate of tuition and fees, and audit courses are counted as a part of the student's semester credit hour total. A student auditing a course is subject to attendance regulations and may be subject to other course requirements at the discretion of the instructor. A grade of "AU" will be entered on the academic record of all students enrolled for audit.

A change in registration from "audit" to "credit" or from "credit" to "audit" must be effected during the add/drop period. A course taken for audit cannot be given credit at a later date.

H = Honors—Courses assigned the "Honors" grade will not be computed into the grade-point average.

P = Grade of Pass—Awarded as a grade for certain courses to denote satisfactory completion of requirements. Courses assigned the grade of "P" will not be computed into the grade-point average.

NC = Grade of NC—This grade may be assigned as an interim grade for work on thesis or dissertation.

PR = Grade of Progress—Assigned as an interim grade for certain continuing courses, research, or thesis projects which run over several grade reporting periods. The grade of "PR" may be assigned only in courses approved for such grading. Unlike the grade of "I," the grade of "PR" will not automatically be changed to a failing grade at the end of the succeeding semester.

CO = Grade of Continued—The grade of

"CO" may be assigned as an interim grade for those courses which run over several grade reporting periods. The "CO" indicates that the course is not expected to be completed in a single semester and that the student **must reregister for the course**. Upon completion of the course, a final grade will be assigned to the current semester and the previous "CO" grade(s) will remain. This grade may be assigned only in courses approved for such grading.

SCHOLARSHIP HONORS

Dean's List. For certain schools, students are placed on the dean's list for one semester if they have earned a grade-point average of 3.5 in the preceding semester, based on a minimum load of 15 credits with no grade below "C." Students with grades of incomplete or who are absent from the final examination are not eligible for the dean's list.

Graduation Honors. Candidates for degrees in certain schools may be eligible for special scholarship recognition under the following conditions:

Summa Cum Laude. Awarded for a cumulative grade-point average of 3.9 and above on all credits attempted.

Magna Cum Laude. Awarded for a cumulative grade-point average of 3.6 to 3.89 on all credits attempted toward the degree awarded.

Cum Laude. Awarded for a cumulative grade-point average of 3.3 on all credits attempted toward the degree awarded.

Graduation honors for medical students will be determined by the Medical School Promotion Committee.

A transfer student, to qualify for graduation honors for the baccalaureate degree, is required to complete a minimum of 45 credits at VCU with a scholastic average of 3.9 or above for summa cum laude, 3.6 to 3.89 for magna cum laude, and 3.3 to 3.59 for cum laude. Performance at other institutions must be of sufficient quality to sustain the above averages.

Recognition of graduation honors will be made on the student's diploma, permanent academic record, and in the commencement program.

GRADUATION APPLICATION

The University confers degrees in May, August, and December; however, it holds an annual commencement exercise in May only. Each

student who expects to complete the degree requirements by the end of a semester or summer session is required to file an application for a degree. Application forms may be obtained from the dean's office of the school in which the student is enrolled. Students must submit degree applications to the dean's office no later than the dates indicated in the University calendar.

TRANSCRIPTS

The transcript is a copy of the student's permanent academic record. An official transcript carries the University seal. Transcripts given directly to students do not carry the University seal.

Transcripts of student academic records are issued by University Enrollment Services/Records only upon the written request of the student. The request should be made at least one week prior to the date needed.

No transcript will be issued unless indebtedness to the University has been satisfied.

Transcript requests signed by the student may be submitted in person or by mail to University Enrollment Services/Records, Virginia Commonwealth University, Richmond, VA 23298-0277.

LIMITATIONS ON BULLETIN PROVISIONS

All rules and regulations set forth in this bulletin will apply until further notice. The right is reserved to make changes in courses of study, fees, rules and regulations governing the conduct of the work in all schools and programs, faculty and staff, and classification of students whenever University authorities deem it expedient or wise to do so.

GENERAL COURSE INFORMATION

Course Numbering

Courses numbered in the 100 and 200 series comprise the lower-division offerings and are open to all students; courses numbered in the 300 and 400 series comprise the upper-division offerings and are designed primarily for juniors and seniors. Courses in the 500, 600, and 700 series are for fifth-year pharmacy, first-professional, and graduate students.

Evening and summer studies offerings are the same as those listed herein.

Course Numbering System

1. All course numbers consist of three digits (XXX).
2. The first digit relates to the course level as follows:
 - a. 0XX Noncredit
 - b. 1XX Undergraduate, Lower Level
2XX
 - c. 3XX Undergraduate, Upper Level
4XX
 - d. 5XX Introductory Graduate
First-Year, First-Professional
(Medicine and Dentistry)
Fifth-Year Professional Baccalaureate (Pharmacy)
 - e. 6XX Graduate
7XX
8XX
6XX Second-Year, First-Professional
(Medicine, Dentistry, and Pharmacy)
7XX Third- and Fourth-Year, First-Professional (Medicine and Dentistry)

Course Interpretation

A single number listing for a course, such as PMC 638, indicates that it is a one-semester course and may be offered each semester or only one semester each year.

Courses listed with a double number, such as PHA 635, 636 and designated as semester courses, consist of two one-semester courses, either semester of which may be taken without the other.

Courses listed with a double number, such as PHT 307-308 and designated as a continuous course, consist of two one-semester courses, the first of which can be taken without the second, but the second of which cannot be taken without the successful completion of the first.

The University reserves the right to withdraw any course or program.

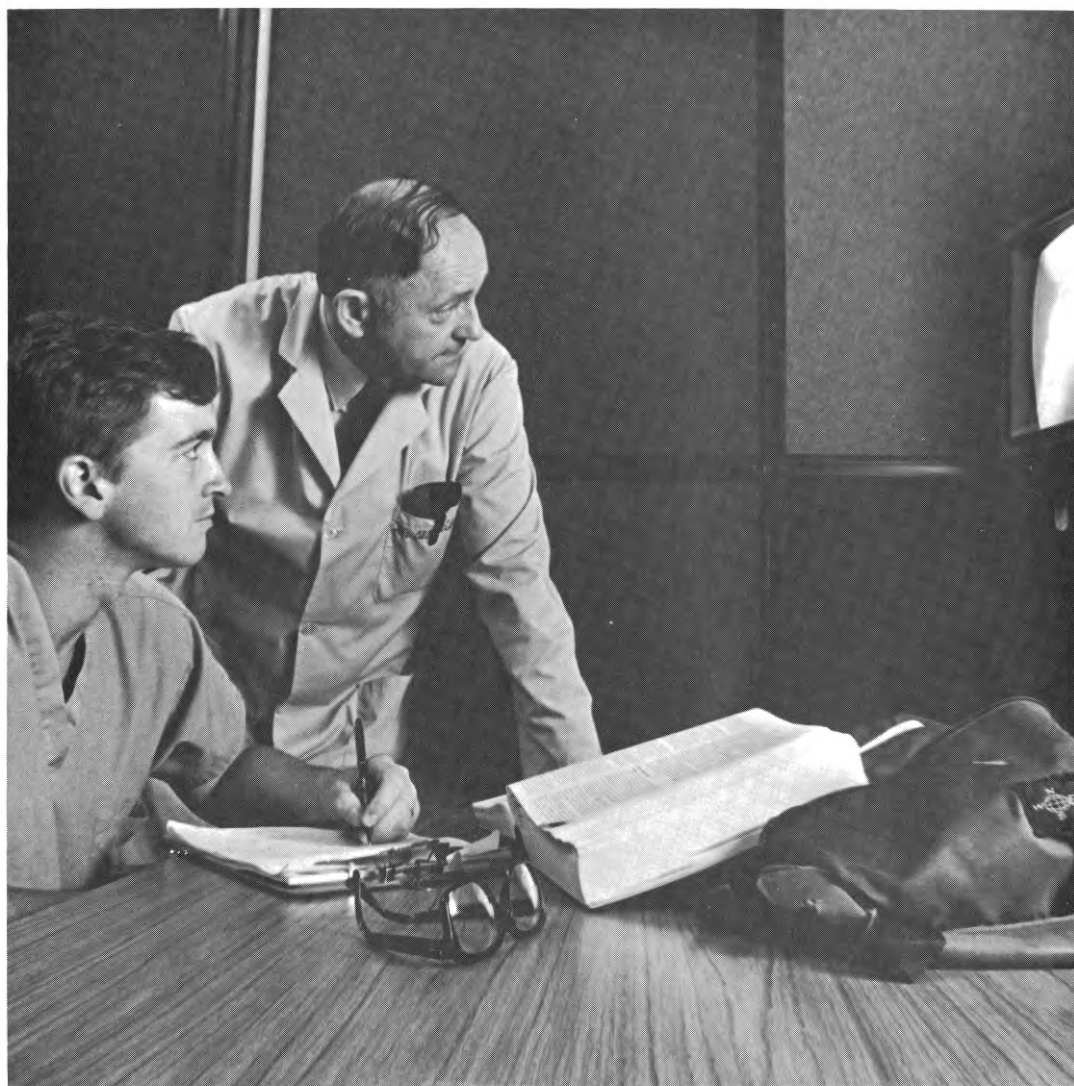
ABBREVIATIONS

AHP	Allied Health Professions
ANA	Anatomy
BAS	Basic Health Sciences
BIC	Biochemistry and Molecular Biophysics
BIO	Biology
BIS	Biostatistics
BME	Biomedical Engineering
BUS	Business
COE	Counselor Education

CRS	Clinical Radiation Science
DEH	Dental Hygiene
DEN	Dentistry
EDU	Education
END	Endodontics
GED	General Dentistry
GEN	Human Genetics
GRS	Graduate Studies
GTY	Gerontology
HCM	Health Care Management
HAD	Health Administration
HIM	Health Information Management
MAT	Mathematics
MED	Medicine
MER	Medical Record Administration
MET	Medical Technology
MIC	Microbiology and Immunology
NUA	Nurse Anesthesia
NUR	Nursing
OCC	Occlusion
OCT	Occupational Therapy
ORP	Oral Pathology

ORS	Oral and Maxillofacial Surgery
ORT	Orthodontics
PAC	Patient Counseling
PAT	Pathology
PED	Pediatric Dentistry
PER	Periodontics
PHA	Pharmacy
PHC	Medicinal Chemistry
PHT	Physical Therapy
PHP	Pharmacy and Pharmaceutics
PIO	Physiology
PMC	Pharmacology and Toxicology
PSY	Psychology
RED	Restorative Dentistry
REP	Removable Prosthodontics
RTE	Radiologic Technology
SOC	Sociology
SLW	Social Work
STA	Statistics

For other abbreviations, consult the *VCU Undergraduate Bulletin*.



PART II — School of Medicine

STEPHEN M. AYRES, M.D.

Dean

ALBERT J. WASSERMAN, M.D.

Executive Associate Dean

JOHN T. FARRAR, M.D.

Associate Dean, McGuire Veterans

Administration Medical Center

JOHN W. HARBISON, M.D.

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HEBER H. NEWSOME, M.D.

Associate Dean, Clinical Activities

HUGO R. SEIBEL, Ph.D.

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DONALD M. SWITZ, M.D.

Associate Dean, Ambulatory Services

W. ROBERT WRIGHT, JR., B.A.

Associate Dean for Administrative and

Medical School Practice Activities

REUBEN B. YOUNG, M.D.

Associate Dean, Continuing Education

JAMES M. MESSMER, M.D.

Assistant Dean, Admissions

The School of Medicine of the Medical College of Virginia opened on November 5, 1838, as the medical department of Hampden-Sydney College.

Full-time clinical faculty members were first appointed in 1928, and improved facilities became available between 1936 and 1941 with completion of the 600-bed West Hospital, A. D. Williams Clinic, and Hunton Hall dormitory, which was located on the current site of the Main Hospital building. Growth in faculty, students, and facilities continued after World War II leading to the development of today's academic health center.

Hospital facilities on the MCV Campus include both inpatient and outpatient facilities.

MCV Hospitals is licensed for 1,058 beds and currently operates 901 beds, including 548 in MCV Main Hospital and 296 in the newly renovated MCV North Hospital, with the remainder in the West Hospital building. In addition, the new 814-bed hospital at the McGuire Veterans Administration Medical Center provides excellent patient care, training, and research opportunities for the School of Medicine through its affiliation programs.

GENERAL INFORMATION

The mission of the School of Medicine is constant improvement of the quality of health care for citizens of Virginia, using innovative, scholarly activity to create new knowledge, to provide better systems of medical education, and to develop more effective health care methods.

The School of Medicine shares the general objectives of the Medical College of Virginia of Virginia Commonwealth University:

1. To maintain an environment of educational excellence that will attract students and faculty interested in an institution maintaining the highest academic standards.
2. To promote an educational atmosphere that will develop in students: (a) desire and interest in lifelong learning, (b) intellectual curiosity, and (c) excellence in skills and knowledge required for the solution of problems of health and disease.
3. To provide standards of clinical practice and scientific investigation that will serve students as examples throughout their

professional careers.

The primary aim of the School of Medicine is to provide an academic environment appropriate for the education of its students, including undergraduate medical students and graduate physician house officers, and continuing education directed towards the needs of practicing physicians. In the classroom, laboratory, clinic, and hospital, the faculty and students are brought together in teaching-learning experiences promoting scientific scholarship and personal growth in knowledge and professional skills.

The School of Medicine and its faculty have vested responsibilities for the advancement of knowledge through research and for service to the community through application of skills in health care leadership and patient care. Therefore, we share with teaching the interdependent and almost inseparable objectives of research and service.

FACULTY AND FACILITIES

The School of Medicine faculty consists of 169 basic scientists, 596 geographic full-time clinicians, including affiliates, assisted by 611 interns and residents, and 31 part-time and 714 volunteer clinical faculty. Programs of instruction and research are conducted on campus, at the McGuire Veterans Administration Medical Center, and at affiliated hospitals in an effort to expose the student to the variety of clinical disorders encountered in the eastern United States. Those affiliated community hospitals beyond Richmond include Northampton-Accomack Hospital in Nassawadox, Johnston Memorial Hospital in Abingdon, Southside Regional Medical Center in Petersburg, Riverside Hospital in Newport News, and Rappahannock General Hospital in Kilmarnock.

ADMISSIONS

The School of Medicine participates in the American Medical College Application Service (AMCAS). The AMCAS application forms can be obtained from AMCAS, Suite 301, 1776 Massachusetts Avenue, N.W., Washington, D.C. 20036. The application request forms are available from premedical advisors in all colleges and universities or from the Admissions Office of the School of Medicine, MCV/VCU.

Application for the School of Medicine should be made on or after June 15 of the year preceding intended matriculation. The closing date for

filing applications for this institution is December 1 of the year preceding the enrollment date. Priority for admissions is given to Virginia residents. Members of minority groups underrepresented in medicine are encouraged to apply to the School of Medicine. Students previously dismissed from a medical school will not be considered.

A nonrefundable \$50 application fee and supplemental information, including faculty recommendations, are required with all applications accepted for further consideration. The final date for returning supplemental information is January 15 of the year preceding possible enrollment in the School of Medicine.

The School of Medicine will not admit students from other health sciences schools at Virginia Commonwealth University until such students have completed the degree program for which they are enrolled.

The School of Medicine participates in the Early Decision Plan. This program permits an applicant to file a single application through AMCAS on or after June 15 but prior to August 1. All applicants filing under the Early Decision Plan will receive consideration for admission and a response on or before October 1. All applications for the Early Decision Plan must be supported by the results of the new MCAT test at the time the application is made.

The early notification date of this plan ensures that those who are unsuccessful have ample time to request further distribution of their applications to other medical schools. Further information on the Early Decision Plan is available with the AMCAS application.

Requirements for Entrance

The new MCAT is required as part of the application. It is necessary that the test be taken no later than the fall of the year of application since selections will be complete before the spring test is given in the year of admission. This test is produced by the American College Testing Program, P.O. Box 414, Iowa City, Iowa 52240, and is administered in colleges and universities throughout the country. Information about the MCAT is available through premedical advisors or directly from the American College Testing Program.

Applicants may be admitted on the basis of 90 semester hours of outstanding achievement; however, a majority of students admitted are completing their baccalaureate programs. The

college major for premedical students should be selected in accordance with the individual student's aptitude and interest. The prerequisites for the School of Medicine have been reduced to a minimum in order to permit the widest possible latitude in preparation for medical education.

Prerequisites for admission include a minimum of 90 semester hours (or the equivalent) in a college or university accredited by the regional accrediting agency. This program of study must include a minimum of

1. English — two semesters. (One semester to include grammar and composition.)
2. College mathematics — two semesters.
3. Biological science (eight semester hours), including laboratory experience. This may be satisfied by general biology, general zoology, or botany. No more than half may be botany.
4. General or introductory chemistry (eight semester hours), including laboratory. An appropriate portion of this requirement may be met by courses in analytical chemistry or physical chemistry.
5. Organic chemistry (six semester hours), including laboratory. This course should be equivalent to and acceptable for continued studies in a chemistry major.
6. General or introductory physics including laboratory experience (eight semester hours).

Students are encouraged to pursue their own intellectual interests in college in order to obtain a broad education consistent with their major program. Courses in medically related science areas will not relieve the student of his/her responsibility for these subjects in the medical curriculum.

Selection Factors

Demonstrated academic skill and ability, as well as attributes of character and personality, are of significance to the Admissions Committee in the selection process. A review of academic achievement as represented by the standard academic record and summaries, MCAT scores, evaluations, and interviews are all sources of information on which the comparative evaluation process is based.

A review of the completed application file and interviews with members of the Admissions Committee are a definite part of the procedure.

The interview is an opportunity for the applicant to become acquainted with the institution, and it offers additional information for the selection process. Campus interviews in Richmond are preferred.

Each year more applicants are interviewed than can be accepted in each class. Therefore, an interview is not an indication of acceptance to the School of Medicine.

Offers for admission are made, as previously indicated in the Early Decision Plan and on the uniform acceptance date of October 15, with rolling admissions occurring thereafter until the class selections have been completed. The alternate list is constituted from selected and notified candidates at the time the class is filled. It is from this group of applicants that replacements are drawn for any vacancies which may occur in the selected class between that time and the third week of attendance.

Since selections are made in advance of actual attendance, all acceptances are made on condition of satisfactory completion of courses planned or in progress. It is expected that candidates will maintain acceptable standards of deportment.

Students offered acceptance into a class are expected to respond within two weeks of the offer. If such a response presents a problem, extension of the time for the response should be requested. The enrollment of accepted candidates is considered complete only after payment of the \$100 deposit against the first tuition payment. This deposit will be returned to the candidate should withdrawal take place prior to March 1 of the year of attendance.

By the act of matriculating in the School of Medicine, the student accepts the responsibilities related to this opportunity and agrees that during the time that he/she is a registered student he/she will follow the rules and regulations established by the governing bodies of the School of Medicine and the University.

TRANSFER IN ADVANCED STANDING

Advanced standing admission is open only to students who have not previously been dismissed from any medical school and who are in good standing in American medical schools. Such individuals must present scores for Part I of the National Board of Medical Examiner's examination as part of the application credentials when transferring to the third year.

A transfer student is accepted to the third year

on a space-available basis created by attrition. Application materials and further information may be obtained by writing to Admissions, School of Medicine, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA 23298-0565.

Students in foreign medical schools recognized by the World Health Organization may apply for admission to the first-year class.

CURRICULUM

The program for the M.D. degree is divided into four phases, each of a year's duration. Medicine I, occupying the first year (late August to early June), emphasizes normal human structure, function, growth, and development. Medicine II, occupying the second year (August to June), stresses the abnormal. Medicine III occupies the third year (July to July) and consists of clinical education and training. The fourth year (Medicine IV), lasting from August to mid-May, consists of approximately one-third required clinical education and training and approximately two-thirds electives at MCV/VCU and at approved medical schools elsewhere in the USA and abroad. Elective opportunities are offered also in M-I and M-II.

One-half- to one-day seminars on each of several practice-related topics are presented during the M-III year. The entire class convenes for these required sessions.

REGISTRATION IN COURSES OFFERED BY THE SCHOOL OF MEDICINE IS RESTRICTED TO STUDENTS ENROLLED IN THE SCHOOL OF MEDICINE AT THE MEDICAL COLLEGE OF VIRGINIA, VIRGINIA COMMONWEALTH UNIVERSITY.

Medicine I and II

The curriculum is viewed as a dynamic and evolving entity, and course titles, content, or duration of emphasis may be subject to modification for the sake of improving the learning experience.

The first year begins with a two-day program concerned with the human values essential for the complete physician. The scientific courses begin with six weeks of cell biology, a combined course of molecular biology, biochemistry, cellular physiology, ultra-structure, and genetics. This is followed in sequence by the major sciences basic to medicine and by a combined

systems course in neurosciences. The year includes a one-week assignment to the office of a primary care physician.

Course	Length
Human Values	½ Week
Cell Biology and Biochemistry	6 Weeks
Anatomical Sciences	11 Weeks
Physiology	12 Weeks
Behavioral Sciences	
Human Genetics	
Epidemiology/Biostatistics	
Neurosciences	6 Weeks
Pathogenesis	1½ Weeks
Introduction to Clinical Skills	

Each subject matter in M-I and M-II is designed and implemented by a faculty committee, and each phase of the curriculum is supervised by a faculty coordinator. In M-III a committee under a coordinator supervises the clinical experiences, and in M-IV there is an electives committee whose chairman is the M-IV coordinator.

In M-II, the organ system interdisciplinary subject matters are:

Course	Length
Infection and Immunity	7 Weeks
Preventive Medicine/Autonomic Pharmacology	1 Week
Hematology/Oncology	3 Weeks
Central Nervous System	3 Weeks
Gastroenterology	4 Weeks
Behavioral Science	2 Weeks
Respiratory	3 Weeks
Cardiovascular	4 Weeks
Musculoskeletal-Skin	4 Weeks
Renal	3 Weeks
Endocrine-Reproduction	5 Weeks
Introduction to Clinical Medicine (concurrent with the above)	

Medicine III

Rotation	Length
Internal Medicine	12 Weeks
Surgery	8 Weeks
Pediatrics	8 Weeks
Obstetrics-Gynecology	6 Weeks
Psychiatry	6 Weeks
Neurology-Neurosurgery	4 Weeks
Community Practice	4 Weeks
M-III Combined Workshop	1 Week

Medicine IV

The School of Medicine, in an effort to serve best the needs and goals of the individual student, offers M-IV students the option of choosing electives during two-thirds of their senior year. The elective curriculum has been arranged

primarily to allow those students who have definite goals to pursue them logically without adherence to a required curriculum. At the same time, it allows those who have not yet defined their goals an adequate assortment of electives with which to explore career options. Where standard elective choices seem too limiting, students are encouraged to approach individual faculty members relative to the development of unique courses that more closely approach individual needs. A member of the M-IV Committee is available to advise each student and to approve of each student's program.

The year is divided into nine four-week periods. The required rotations which must be served at the Medical College of Virginia Campus are emergency room, an acting internship, and completion of the "Update of Basic Sciences and Clinical Medicine" course.

A new electives catalog is published each year.

All students are required to take the National Board Part I Examination at the end of M-II and Part II in the fall of M-IV.

In addition, all students are required during their period of matriculation to complete a research project and to submit an acceptable report. The project may be basic or clinical, and a list of preceptors is provided.

GRADUATE MEDICAL EDUCATION

Clinical training leading to qualification for certification by the American specialty boards is offered in the following programs: general surgery, vascular surgery, thoracic surgery, urology, allergy and immunology, anesthesiology, dermatology, dermatopathology, family practice, internal medicine, neurosurgery, neurology, child neurology, obstetrics/gynecology, ophthalmology, orthopedic surgery, otolaryngology, pathology, forensic pathology, neuropathology, pediatrics, pediatric cardiology, pediatric allergy and immunology, pediatric hematology and oncology, nuclear medicine, neonatal-perinatal medicine, physical medicine and rehabilitation, plastic surgery, psychiatry, diagnostic radiology, diagnostic radiology (nuclear), therapeutic radiology, oral surgery, public health, and preventive medicine.

Programs sponsoring a PGY-1 year (internship) are internal medicine, surgery, family practice, obstetrics/gynecology, pathology, pediatrics, anesthesiology, psychiatry, diagnostic radiology, therapeutic radiology, and physical medicine and rehabilitation.

Requests for further information should be directed to the program of interest or the Associate Dean for Graduate Medical Education, School of Medicine, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA 23298-0257.

CONTINUING EDUCATION

Mission Statement

The primary goal of the Office of Continuing Education in Medicine and Allied Health Professions at MCV/VCU is to provide educational experiences specifically designed to enhance the delivery of high quality patient care by physicians and other health care professionals in Virginia and other states. The philosophy of continuing medical education is based on the belief that learning must be viewed as a lifelong process. In past generations, the graduating physician was able to look upon an acquired knowledge base as a reasonably stable resource for practicing medicine. However, today's rapidly expanding load of scientific information forces a continuing learning effort upon the physician. Undergraduate and graduate medical education alone can no longer offer reasonable assurance, if indeed they ever could, that practitioners are armed with the knowledge, attitudes, and skills that will enable them to render optimal, achievable patient care throughout their careers. Continuing education is now linked with undergraduate and graduate education to complete the continuum of medical education.

The goal and philosophy stated herein undergird and lend direction to the effort of the Office of Continuing Education as it engages in a diversity of educational and education-related activities. Specifically, the Office of Continuing Education works in concert with the faculty of the School of Medicine as well as other individuals and organizations as appropriate, to

1. Coordinate a state-wide continuing medical education program for several networks of affiliate hospitals.
2. Organize the Virginia Hospital Television Network and provide continuing education programs for physicians and other health professionals directly into hospitals statewide using satellite and audio-conferencing.
3. Develop and deliver a series of short courses, clinical workshops, seminars, international medical study tours, and conferences for physicians and other

health professionals.

4. Provide clinical refresher courses and make readily available self-learning materials and methods.
5. Conduct research to improve the process of continuing medical education.
6. Improve the education of the general public in the proper use of health care resources.

Fostering an appreciation for the concept of lifelong learning in undergraduate and graduate medical school programs is a challenge that is now being confronted by medical schools throughout the nation. During these critical years, the attitudes of medical students toward continuing pursuits of learning are molded and developed. In order to encourage undergraduate and graduate students at MCV/VCU to embrace the concept of lifelong learning, the Office of Continuing Education actively seeks their involvement in its various programs and activities. Brochures, posters, and a yearly catalogue are utilized to announce pending events.

Further information may be obtained by writing the Associate Dean for Continuing Education and Medical Alumni Relations, School of Medicine, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA 23298-0048.

The Office of Medical Alumni Relations

The Office of Medical Alumni Relations was established recently to develop and enhance the School of Medicine's interaction with its alumni. A School of Medicine newsletter, first published in 1987, provides a direct communication link between the school, its departments, and its alumni. All alumni are encouraged to keep the office informed of personal news for publication. The office and its staff are available to alumni for information, advocacy, and assistance in their contacts with the school and its departments. Staff also will coordinate the new MCV Bed and Breakfast Program for students on residency interviews. Additional student/alumni opportunities will be developed.

The office welcomes ideas and suggestions from all alumni and students at any time. For further information, please contact Director, Office of Medical Alumni Relations, School of Medicine, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA 23298-0290; telephone (804) 225-3578.

The Office of Development

The Office of Development was established to secure private philanthropic support for the School of Medicine. This office is responsible for the identification, cultivation, and solicitation of major gifts to the school from individuals, corporations, and foundations. The office works closely with the school's Office of Medical Alumni Relations, the MCV Hospitals' Office of Development, the MCV Foundation, and the University Advancement Office.

Gifts to the University may be restricted to the School of Medicine by making a gift to the MCV Foundation and designating it for any of the variety of purposes that fall within the scope of the school's activities. Gifts may be made outright, pledged over a period of years, or made through any one of several planned gift mechanisms which allow for the return of income to the donor after the gift is made.

The Office of Development also helps coordinate several donor recognition events and assists in maintaining contact with past donors to the School of Medicine.

Further information may be obtained by writing to Director, Office of Development, School of Medicine, Virginia Commonwealth University, Medical College of Virginia, Richmond, Virginia 23298-0022, or by calling (804) 371-7451.

ANNUAL LECTURESHIPS

The Department of Pediatrics sponsors annually a medical education program and the **Sutton Lecture** in honor of the late Dr. Lee E. Sutton, Jr., who was chairman of the department from 1938 to 1958 and dean of the medical school from 1929 to 1942.

The annual **Students Honors Day**, sponsored by the American Medical Student Association and Alpha Omega Alpha, has been designated **Kinloch Nelson Medical Student Honors Day** as an expression of appreciation for the leadership Dr. Nelson provided during his tenure as dean of the School of Medicine from 1963 to 1971.

The **Sanger Lecture** was established and endowed by the late Dr. Harvey B. Haag, professor and chairman of the Department of Pharmacology and dean of the School of Medicine from 1947 to 1951, as a tribute to Dr. William T. Sanger for his dedication and service to the institution. Dr. Sanger served as president of MCV from 1925 until 1956, chancellor from

1956 to 1959, and chancellor emeritus from 1959 until his death in 1975. The lectureship annually offers topics of current interest in the area of science and religion to the University and the Richmond community.

The annual **Charles W. Thomas Lectureship** was begun in 1971 in honor of Dr. Thomas, whose bequest of one million dollars led to the establishment of the Charles W. Thomas Arthritis Research Unit for research and education in the area of arthritis, a disease from which he suffered. A graduate of the Medical College of Virginia, Class of 1903, Dr. Thomas was a native of Patrick County, Virginia, and practiced medicine in the state for over 50 years.

In 1973, former residents in obstetrics and gynecology from the Medical College of Virginia, through their organization, the H. Hudnall Ware, Jr., Society, established the **H. Hudnall Ware, Jr., Visiting Professorship** in honor of H. Hudnall Ware, Jr., M.D., who was professor of obstetrics and gynecology from 1942 to 1967. The visiting professorship is combined with a two-day postgraduate continuing education program which provides information regarding recent advances in obstetrics and gynecology.

The **John Hoover Moon Memorial Lectureship** was established in 1972 as a tribute to John Hoover Moon, M.D., professor of medicine, for his outstanding contribution to teaching and research. A graduate of the School of Medicine, 1949, he was the first clinical research fellow in the Division of Hematology. His research interests centered around the chemotherapy of malignant disease. The John Hoover Moon Memorial Foundation makes this annual lectureship possible.

The **Carolyn and Howard McCue Lectureship** was initiated September 22, 1987, to honor both of these physicians. The annual one-day lectureship alternates each year with pediatric and medical speakers. It is supported by gifts from family, residents, fellows, and friends through the MCV Foundation.

In recognition of long and brilliant service to the Medical College of Virginia, the Board of Visitors established the annual **Stuart McGuire Lectureship** on May 27, 1929. Dr. McGuire (1867–1948) served as professor of surgery, dean, president, and chairman of the Board of Visitors during his lifetime. The lecture series offers topics primarily in surgery.

The annual **Stoneburner Lecture Series** was

initiated in 1946 in memory of Dr. Lewis T. Stoneburner III by his comrades in the 45th General Hospital, U.S. Army. Dr. Stoneburner graduated from MCV in 1937 and died in 1943 while serving his country as an army officer in North Africa. The lectures annually offer topics of current interest in medicine.

COMBINED M.D. AND M.S. OR PH.D. PROGRAMS

The School of Medicine encourages applications from individuals interested in the combined M.D./Ph.D. program. This program provides superior preparation for a career in academic medicine or medical research. The program at the Medical College of Virginia has successfully trained independent medical research scientists and academicians.

Students interested in this combined degree program must be accepted by both the School of Medicine and one of the Ph.D.-granting programs within the School of Basic Health Sciences. The application process is simplified by acceptance of MCAT and references and transcripts utilized in applying to the School of Medicine. Students in the combined degree program are given credit for basic science instructions received in the first years of medical school. Summers and elective time during these years provide excellent opportunities to begin research training. Almost the entire fourth year may be devoted to graduate school education.

The minimum requirement in addition to the first three years of medical school is one year for the M.S. and two years for the Ph.D. degree. Because the medical school curriculum provides a very broad-based background, combined-degree students are required to take few, if any, introductory-level graduate courses. Graduate school courses should provide in-depth education in one discipline.

Students are advised to declare their research interest in the first academic years because the use of elective and summer time may be critical in their individual schedules. For additional information, students may contact the Medical School Curriculum Office or the dean of the School of Basic Health Sciences.

GRADING AND PROMOTIONS

Each student's progress toward his/her objectives is evaluated by examination upon each subject matter and by national board examinations

at appropriate times. Grades are assigned on the honors, high-pass, pass, marginal, or fail basis. Students receiving marginal or failing grades are counseled. All students are assigned a faculty advisor. This advisor is available to the student throughout the four years of study.

Students who have attained satisfactory grades in M-I and M-II but who do not pass National Boards Part I may receive special instruction in the basic medical sciences during the third school year, prior to their repeating the Part I examination. These students will use part of their fourth year to complete the segments omitted during the special instruction period. Those who do not show significant improvement will be reviewed by the Promotions Committee, which will formulate a plan for each student.

At the close of each academic year, the Promotions Committee, composed of chairmen of departments, recommends to the dean which students have achieved the objectives of the year and are qualified for either promotion or graduation. The Promotions Committee is charged to give careful individual attention to all aspects of student achievement, effectiveness, behavior, and attitude. The committee is charged not to promote any student who has failed to meet the requirements of the preceding year, or who appears unfit for the practice of medicine. When the committee determines by majority vote that a student will not be promoted, it then recommends to the dean remedial activities or dismissal in instances where no remedy is perceived. The dean reviews the recommendations and promptly notifies students that they have been promoted, must repeat a year, or have been dismissed. A student repeating the year is expected to show significant improvement. The Promotions Committee will also meet each December to review the status of all senior students, all third-year M.D./Ph.D. candidates, and any third-year candidates for three-year graduation. Furthermore, the committee will review any other students in serious academic difficulty and may, at this meeting, choose to take final action on such students, including dismissal.

An appeals committee of three senior faculty will hear appeals of dismissals when such are filed in writing within 14 days of the student's notice of dismissal. A student may also appeal a decision to repeat a year, but will be reviewed by the Appeals Committee only when it is found that the student will present information not

previously available to the Promotions Committee. A student appealing has the right to appear before the Appeals Committee and to have an advisor participate. The dean of the School of Medicine will act upon the recommendation of the Appeals Committee within fourteen days of receipt of the committee's recommendation.

WITHDRAWAL

A student may not leave school prior to completion of an academic year unless granted leave of absence by the dean. A student who leaves without such permission or who fails to return by the end of the granted term of leave, is considered dismissed from the class and may return only by applying for possible readmission. Where such a student has demonstrated any academic deficiency, the application is presented to the Promotions Committee. Otherwise, the Admissions Committee will determine whether to readmit the applicant.

REQUIREMENTS FOR GRADUATION

The degree of Doctor of Medicine will be conferred by Virginia Commonwealth University upon candidates who, in the opinion of the medical faculty, have

1. Attained the school's educational objectives as evidenced by satisfactory completion of prescribed courses and examinations, by proven clinical skills and responsibilities, and by ethical standards;
2. Attended the School of Medicine, Medical College of Virginia, for a minimum of two years, one of which must be an academic year of clinical rotations; and
3. Discharged all financial obligations to the University.

It is the policy of the School of Medicine that candidates must be present at commencement exercises unless excused by the dean.

STUDENT PARTICIPATION

The dean and faculty solicit the advice of students in conducting the affairs of the medical school. Student officers elected by their classes meet for dinner quarterly with deans and curriculum coordinators. At these meetings, each phase of the curriculum and any other matters of concern to students are discussed in detail. Each class also elects representatives to the faculty committees which design its curriculum. Stu-

dents are selected by the dean and the faculty to serve on the Admissions Committee, on faculty tenure committees, and on committees to recommend appointment of deans. A continuing effort is made to improve methods for student evaluation of teaching technique. All students are welcome to visit the deans, teachers, and faculty advisors at any time to volunteer opinions or seek explanations of procedures employed by the school.

STUDENT FELLOWSHIPS

Opportunities are available for study and investigation under the tutelage of faculty members in their laboratories during the summer vacation and as an extracurricular activity during the school year.

These studies are supported by the A. D. Williams fellowship endowment with selections made by the A. D. Williams Committee on the recommendations of the Institutional Research Advisory Committee. Selections for project grant funds are made by the principal investigators.

The Robert C. Bryan Summer Fellowship in Pathology was given by Mr. Jonathan Bryan in memory of his father.

The Arthur T. Lyman Fellowship in Pathology is awarded to an outstanding student participating in the summer fellowship program. This represents a gift from Mrs. Fairfield Goodale in memory of her father.

FINANCIAL ASSISTANCE

A brief description of financial aid based on demonstrated need is contained in Part I of this bulletin. Financial need-based aid programs available to medical students include Health Professions Student Loan, Perkins/National Direct Student Loan, State Family Medical Scholarship, Norfolk Foundation Scholarship, Lincoln/Lane Foundation Scholarship, and various institutional loans and grants.

Information on the State Family Medical Scholarship may be obtained from the Department of Family Practice, School of Medicine; information on the other programs is available from the MCV Campus Financial Aid Office.

U.S. Armed Forces Scholarships

The Army, Navy, or Air Force provides up to four years of paid tuition and fees, book and supplies allowance, and a stipend in exchange for

military service after graduation. Normally, the recipient serves one year on active duty for each year of scholarship, with a minimum of three years. Additional information may be obtained from local armed services recruiting offices.

HONORS AND PRIZES

Student research and honors day is held in May. Begun by the American Medical Student Association, it is now a joint effort of that organization, the Alpha Omega Alpha honorary scholarship society, and the medical school. Honors and prizes in the medical school include

Alpha Omega Alpha. The Brown-Sequard Chapter, established at MCV in 1940, elects to membership each year senior and junior students who have demonstrated outstanding academic achievement as evidenced by cumulative ranking in the upper one-fourth of the class. Membership is limited to a maximum of one sixth of each class.

Sigma Xi. Seniors of high scholastic achievement who show promise of success in research may be elected to associate membership in the VCU chapter of this national honorary scientific society.

Sigma Zeta. Outstanding members of the junior and senior classes of the Schools of Medicine, Dentistry, Pharmacy, and Nursing are elected to this honorary scientific society.

L. Beverly Chaney Scholarship. For responsible leadership during the first three years of medical school, a senior scholarship of \$2,500 from the Joseph Collins Foundation in memory of its trustee, Dr. Chaney, who graduated from the School of Medicine in 1918.

Merck Company Foundation Scholarships. Eight scholarships of approximately \$1,000 awarded by the Merck Company Foundation to students with superior academic performances.

The Upjohn Prize. A plaque and \$150 awarded by the Upjohn Company to the senior student chosen by his classmates as the most outstanding in scholarship and leadership.

William Branch Porter Stethoscope. A silver replica of the stethoscope given by Sir Thomas Lewis to Dr. Porter, professor of medicine from 1928 to 1956, is awarded to a senior student for outstanding achievement in internal medicine.

Isaac A. Bigger Medal. A medal awarded annually to a surgical resident for integrity, leadership, teaching, and clinical ability, in memory of Dr. Bigger, professor of surgery from 1930 to 1955.

Lee E. Sutton, Jr. Prize. Awarded to a senior student for excellence in pediatrics, in memory of Dr. Sutton, professor of pediatrics from 1938 to 1958, and dean from 1929 to 1942.

Robert C. Bryan Prize. For excellence in sophomore pathology, an annual award of \$50 in memory of Dr. Bryan, professor of urology from 1917 to 1934.

Aubrey H. Strauss Prize. For excellence in sophomore microbiology, an annual award of \$75 in honor of Dr. Strauss, assistant professor of microbiology from 1909 to 1924.

Hjalmar L. Osterud Prize. For excellence in freshman anatomy, \$75 awarded annually to a medical or dental student in memory of Dr. Osterud, professor of anatomy from 1922 to 1953.

Outstanding Pathology Graduate Student. A prize of \$125 is awarded to the pathology graduate student showing the most promise of success in research.

A. D. Williams Award. Awards are made to a student in each of the first three years of medical school for outstanding academic achievement.

Ciba Award. A set of Netter Atlas volumes awarded to the sophomore student who has demonstrated the most beneficial extracurricular activity within the community.

Henry Clay Smith Scholarship. Given in memory of Dr. Henry Clay Smith, a graduate of MCV, to two M-III students most likely to emulate Dr. Smith by careers of service to the health needs of rural Virginia. Selections made by the Department of Family Practice.

Medical Society of Virginia. Given by the Medical Society of Virginia on the basis of financial need and academic excellence.

Southern Medical Association. Given by the Southern Medical Association to two M-I students on the basis of financial need and academic excellence.

Richard Kirkland Scholarship. Given by the Richard Kirkland Scholarship Fund to an M-II student on the basis of financial need and academic excellence.

A. H. Robins Scholarship. Given by the A. H. Robins Company on the basis of financial need and academic excellence.

Hoak Scholarship. Given on the basis of financial need and academic excellence.

Carnation Award. Given by the Elbridge Stuart Foundation on the basis of financial need and academic excellence.

Sidney B. Barham Scholarship. Given in

memory of Dr. Sidney B. Barham, Sr. Used for scholarships to deserving medical students elected by the college administration.

Lemmon Award. Given by the Lemmon Company to the outstanding graduating senior of OB/GYN.

Merck Manual. Current edition of the Merck Manual donated by the Merck Company. Four awards given.

Mosby Award. Student receives a certificate from the Mosby Book Company and selects ONE book of their choice from the Mosby catalog. Three awards given.

Langue Award. First-, second-, and third-year students receive a selection card and choose TWO books from the offered selection. Six awards given. Fourth-year students receive a certificate and a selection card to choose FOUR books from the offered selection. Two awards given.

Dean's Award. \$50.00 book selection from the MCV Campus Bookstore.

Elizabeth Joanne Harbison Award. Given for performance during the M-III pediatric clerkship and M-IV pediatric electives. This award is restricted to students entering the field of pediatrics.

Eric C. Schelin Award. For outstanding work in the OB/GYN department based on academic and clinical achievement. The department provides a monetary award and the name inscribed on a plaque in the Department of Obstetrics and Gynecology.

Harry Walker Award. Given to a student for outstanding performance on the M-II Introduction to Clinical Medicine course. This monetary award is selected by a committee from the Alumni Association.

A. J. and Lee Pardoll Endowed Scholarship. This endowed scholarship given by Peter M. Pardoll, M.D., 1971, in memory of his parents, provides a \$1,000 scholarship award for a student entering the second year of study and is based on financial need and academic achievement. Priority is given first to students from Florida and then to non-Virginia residents.

Departments and Divisions of Instruction

DEPARTMENT OF ANESTHESIOLOGY

Professors: Keenan (Chairman); Aghdami; Blass; Kallar; Price; Rafii
Clinical Professor: Jones

Associate Professors: Campbell; Fabian; Hudson; Kane; Lewelt; Nakatsuka; Shah; Stewart; Wiklund
 Associate Clinical Professors: Baird; Rah; Salomonsky
 Assistant Professors: Bass; Clark; Dunwiddie; Everett; Foy; Huang; Hurt; Johnson, E. B.; Leich; Ross; Shapiro; Wilhite; Wolman; Wu
 Assistant Clinical Professors: Albert; FERIA; Litwack; Mueller; Rein; Singh
 Instructors: MacLeod; Searle

DEPARTMENT OF DERMATOLOGY

Professor: Blaylock (Chairman)
 Clinical Professors: Caravati, Jr.; Manson; McMullan; Murrell; Pepple; Scoggins; Trice
 Associate Clinical Professor: Booth
 Assistant Professor: Garrett
 Assistant Clinical Professors: Becker; Blackmore; Blanchard; Fohl; Hudgins; Kelly; Knight; Konerding, H.; Reams; Verwon, H.; Young
 Instructor: Wood, N.
 Clinical Instructor: Kitecs, E. C.

DEPARTMENT OF FAMILY PRACTICE

Professor: Marsland (Chairman)
 Clinical Professors: Gilliam; Harris, J. L.; Mitchell
 Associate Professors: Munson, P.; Williams, R. B.
 Associate Clinical Professors: Atkinson; Bennett; Buston; Carter; Charlton; Clement; Devlin; DeWitt; Elmore; Frederick; Gayle; Harris, J. S.; Henley; Jessee; Johnson; Kellett; Kelsey; Kuzel; Lewis; Mapp; Moffatt; Owen, J. T.; Partridge; Quinnell; Selph; Smith, R.; Spence; Stallings; Temple; Thomas; Vickery; Wenleder; White; Wigand
 Assistant Professor: Blackburn
 Assistant Clinical Professors: Ball; Bates; Beirne; Braza; Bremer; Brillhart; Calihan; Cametas; Carter; Clark; Cole; Daniel; David; Farrell; Faunce; Felton; Filak; Foos; Forrester; Friedland; Gorman; Harrison, H. T.; Heddings; Horne; Hubach; Jones; Katchinoff; Kelly; Kenerson; Kentigh; Kincaid; Kraus; Krop; Layman; Leavens; Ledwith; Lewis; Lowery; MacMillan; McCarrick; McCarter; McKain; Merkel; Merrill; Morrisette; Moyer; Muffelman; Newman; Nichols; Norfleet; Nuckols; O'Brien; Oglesby; Petrizzi; Porter; Ramsey; Royal, F.; Satchwell; Schwartz, R.; Silverstein; Sim; Skaggs; Solan; Solin; Sowder; Spence; Stennett; Sughrue; Steinmetz; Sullivan; Swenson; Tunstall; Turner; Tweel; Weathington; Weaver; Weger; Whitley, D.; Whitley, R.; Wigand; Williams, M.; Wise; Wright; Youngblood; Zakaib
 Clinical Instructors: Chisholm; Cobaugh; Dageforde; Taylor; Pope

DEPARTMENT OF INTERNAL MEDICINE

Professors: Fallon (Chairman); Archer; Ayres; Blackard; Carithers; Carter; Cowley; Duma; Eckberg; Falls; Farrar; Fratkin; Gardner; Glauser; Goldman, I. D.; Guzelian; Hess; Holsinger; Irby, W. R.; James, G. W., III; Kelly, J. J., III; Kontos; Lamb, R. G.; Makhoul; Markowitz; Mauck, H. P.; Mellette; Moore, E. W.; Mullinax; Muren; Nance; Nixon; Oken; Ornato; Owen; Patterson; Porter; Regelson; Richardson; Romhilt;

Ruddy; Scott, R. B.; Schnoll; Schoolworth; Schwartz, C.; Shadomy, H.; Shadomy, S.; Sharpe; Stacy; Switz; Tikoff; Vetrovec; Vlahevic; Wasserman; Watlington; Williams; Witherspoon; Yanovich; Zfass

Clinical Professors: Freund; Klein; Williams, C.

Associate Professors: Adelman; Adler; Bauernfeind; Buchsbaum; Centor; Cooper; DiSciascio; Downs; Fairman; Fowler; Grant; Hastillo; Heuman; Jacobson; Kaplan; Kaplowitz, L.; Kerkering, T.; Kirschbaum; Meier; Mohanty; Paulsen; Pears; Perry; Polatty; Proctor; Rehr; Retchin; Schmitt B.; Schubert; Schwartz, L.; Shadomy, H.; Sica; Smith, W. K.; Stacy; Wampler; Welch; Westin; Wright; Yanovich; Zieve

Associate Clinical Professors: Blount; Burton; Clark, F. A., Jr.; Greenberg; Holland; Kollar; Kuperminc, M.; Markham; McCue, H.; McGehee; Miller, G.; Owens; Sutphin; Temple; Viol

Assistant Professors: Arrowood; Arthur; Barrett; Bechard; Berry; Betcher; Boling; Carr; Clancy; Culpepper; Desch; Ellenbogen; Fairly; Funai; Gehr; Gerwirtz; Godschalk; Goudreau; Hillner; Horvath; Howe; Hylemon; Irani; Jenkins; Johnson, B. A.; Karan; King; Kirby; Krystal; Levy; Minisi; Monroe; Morley; Moxley; Mukharji; Mulligan; Nath; Nayfield; Nestler; Pandak; Pippin; Poses; Quigg R.; Quigg, R. J.; Racht; Roberts; Robinson; Sanders; Sessler; Schuetz, E.; Schuetz, J.; Shiffman; Stanley; Strony; Smith, T.; Swerdlow; Warner; Willis; Wong; Woogen; Yee

Assistant Clinical Professors: Baskerville; Baylor; Becker; Bedinger; Black; Burke, J.; Burke, P.; Buxton; Cader; Deep, W. D.; Doyle; Dunnington, G.; Eppel; Fitzgerald; Goldberg, M. J.; Goldman, S. A.; Grinnan; Halloran; Harris, W. H., Jr.; Henley; Higgins; Hoyt; Hughes, D.; Jessee, F.; Kahn; Lee; Levy; Link; Longacher; MacMillan; Martin, W. W., Jr.; Mathews, E. C.; McIntyre; Miller, M. J.; Monahan; Morey; Nuara; O'Brien; Phillips, C.; Price, C.; Reed; Speckhart; Smith, R.; Smith, T.; Sporn; Starkman; Steinberg; Stith; Strachan; Thornton; Titus; Tucker, H. St. G., III; Tucker, S. C.; Tucker, W.; Vilseck; Weisiger; Williams, R. O.; Wooten; Zacharias, C.

Research Assistant Professors: Wei; Weiss

Clinical Associates: Bailey; Budd; Buis; Bullock; Dingle-dine; Hecht; Irby, E. C.; Markham; McKeown; Mitchell, R. E., Jr.; Regan; Rose, L.; Wingfield

Instructors: Abbey; Brownstein; Foster; Heroux; Jones, E.; Kelly; Kenny; Klein; Kohli; Marshall; McMurtry; Miller, J.; Mooney; Nunley; Old; Pandak; Riker; Rosen; Samuels; Schroeder; Shiffman; Stuckey; Taylor; Toliver-Dingle; Wells; Williams, D.; Woogen; Young; Zilai

Clinical Instructors: Ansell; Ashworth; Davis, T. D., Jr.; Drake; Elliott; Gaspari; Glazier; Hall; Key; Kroll; Lamb; Newman; Nottingham; Parker, C.; Parker, V.; Pollock; Pritchard; Seeman; Wickham; Young, A.; Zacharias, L.

Division of Cardiology

Professors: Kontos (Chairman); Ayres; Cowley; Eckberg; Hess; Holsinger; Nixon; Ornato; Porter; Rehr; Richardson; Romhilt; Tikoff; Vetrovec; Williams

Associate Professors: Bauernfeind; DiSciascio; Hastillo; Mohanty; Paulsen; Pears; Welch

Assistant Professors: Arrowood; Ellenbogen; Funai; Goudreau; Minisi; Nath; Pippin; Quigg, R. J.; Robinson; Strony

Instructors: Crandall; Fuhs; Jesse; Kohli; Marshall; Sabri; Schmedtje; Snow; Taylor; Wood

Division of Cardiopulmonary Laboratories and Research

Professors: Mauck, H. P.; Patterson, J. L.

Division of Clinical Pharmacology

Professor: Wasserman (Chairman)

Associate Professors: Proctor; Wright, J.

Division of Clinical Toxicology and Environmental Health

Professor: Guzelian (Chairman)

Assistant Professors: Schuetz, E.; Schuetz, J.

Instructor: Barwick

Division of Endocrinology and Metabolism

Professors: Blackard (Chairman); Fratkin; Sharpe; Watlington

Associate Professor: Adler; Downs; Zieve

Assistant Professors: Clore; Levy; Nestler

Division of Gastroenterology

Professors: Vlahcevic (Chairman); Carithers; Farrar; Makhlof; Moore; Schwartz; Switz; Zfass

Associate Professors: Heuman; Schubert

Assistant Professors: Kirby; Lee, A.; Pandak; Shiffman; Woogen; Yee

Division of Geriatric Medicine

Professor: Scott, R. B.

Associate Professor: Retchin (Chairman)

Assistant Professors: Barrett; Godschalk; Mulligan; Stanley

Instructor: McMurty

Division of Hematology/Oncology

Professors: Goldman, I. D. (Chairman); James, G. W. III; Mellette; Yanovich

Associate Professors: Adelman; Grant; Smith, W. K.; Wampler; Westin

Assistant Professors: Carr; Desch; Howe; Krystal; Nayfield; Smith, T.; Swerdlow

Division of Infectious Disease

Professors: Duma (Chairman); Archer; Markowitz; Shadomy, H.; Shadomy, S.

Associate Professors: Jacobson; Kaplowitz, L.; Kerkering; Shadomy, H.

Assistant Professors: Berry, A.; Wong

Division of Nephrology

Professors: Schoolwerth (Chairman); Stacy; Falls; Oken

Associate Professors: Kirschbaum; Sica

Assistant Professors: Betcher; Culpepper; Gehr; King; Quigg

Instructor: Nunley

Division of Primary Care and General Medicine

Professors: Gardner; Witherspoon

Associate Professors: Centor (Chairman); Buchsbaum; Kaplan; Perry; Schmitt, B.

Assistant Professors: Becker; Boling; Clancy; Hillner; Johnson, B. A.; Monroe; Poses; Schmitt, J.

Instructors: Abbey; Bell; Brannen; Clemo; Foster; Kelley; Klein; Riker; Samuels; Schroeder; Stuckey; Young

Division of Pulmonary Disease

Professors: Glauser (Chairman); Muren

Associate Professors: Cooper; Fairman; Fowler; Polatty

Assistant Professors: Bechard; Jenkins; Morley; Sessler

Division of Rheumatology, Allergy, and Immunology

Professors: Ruddy (Chairman); Irby, W. R.; Mullinax; Owen

Associate Professor: Schwartz, L.

Assistant Professors: Moxley; Roberts; Sanders, K.; Willis

Instructor: Miller, J.

DEPARTMENT OF LEGAL MEDICINE

Professor: Wiecking (Chairman)

Associate Professors: Fierro, M.; Valentour

Assistant Professors: Ross; Swisher

Lecturers: Beyer; Brewbaker; Crews; Dunn, S. H.; Fauss; Hancock; Massello; Oxley; Page; Presswalla; Russell; Sartoris; Thornhill

DEPARTMENT OF NEUROLOGY

Professors: DeLorenzo, (Chairman); Astruc; Garnett; Harbison; Henry; Leshner; Myer; Pellock; Suter, C. G.; Yu

Clinical Professors: Rennie; Richards

Associate Professors: Calabrese; Campbell; Corrie; Costanzo; Jakoi; Ochs; Sgro; Taylor, D.; Taylor, J.; Ward

Associate Clinical Professors: Harrelson; McGee; Ozer

Assistant Professors: Anderson; Felton; Forman; Hart;

Isrow; Jaitly; MacLaughlin; Pridgeon; Seetharam;

Shapiro; Sombati; Taft; Towne

Assistant Clinical Professors: Brush; Cohen, R.; Harris, J.

K.; Harris, W. O.; Hennessey; Isaacs; O'Bannon; Paschall

Instructor: Rankine

Division of Neuro-Ophthalmology

Professors: Harbison (Chairman); Astruc

Assistant Professor: Felton

Instructor: Rankine

Division of Child Neurology

Professors: Myer (Chairman); Leshner; Pellock

Associate Professors: Taylor, D.

Assistant Professors: Seetharam; Shapiro

DEPARTMENT OF OBSTETRICS AND GYNECOLOGY

Professors: Dunn (Chairman); Blass; Board; Brown, J.; Fantl; Goplerud; Hurt
 Clinical Professors: Petres; Schulman
 Associate Professors: Cohen, S.; Collins, J. B.; Redwine; Van Dorsten
 Associate Clinical Professor: Claiborne
 Assistant Professors: Borzelleca; Brock; Bump; Christmas; Dinsmoor; Hays; Jones, C.; Kauma; Knapp; Maraist; Matt; Peng; Rowe; Soper; Steingold
 Assistant Clinical Professors: Bennett; Bustillo; Cornell; Feore; Fierro, R.; Fitzhugh; Howren; Jarrell; Williams, L. H.
 Clinical Instructors: Adkins; Battista; Broocker; Crooks; Eads; Forrest; Gianfortoni; Gospodnetic; Hamilton; Johnson; Keblusek; MacIvor; Maizels; Minor; Montague, D.; Moore; Oppenheimer; Partridge; Rabhan; Rinehardt; Salyer; Shaughnessy; Visscher; Ware, H. H., III; Wisgirda; Zedler; Zimberg

DEPARTMENT OF OPHTHALMOLOGY

Professors: Ferry (Chairman); Harbison; Madge; Weinberg
 Clinical Professor: McNeer, K.
 Associate Professor: Abedi, S.
 Associate Clinical Professors: Blair; Gazala; Guerry, R.; King, R. G., Jr.; Mayer; Stratford; Wyatt
 Assistant Professors: Carney; Felton; Kaltreider; Richards; Stevens
 Assistant Clinical Professors: Brown; Bunting; Caldwell; Conrad, F.; Davis, F. S.; Jacey; MacMillan; McNeer, P.; Miller, C.; Morgan; Volk
 Clinical Instructors: Bullock; Bundy; Harkrader; Heyner; Petras; Sakowski; Smith, L. T.

DEPARTMENT OF OTOLARYNGOLOGY

Professors: Williams (Chairman); Frable; Lenhardt; Nance; Sismanis
 Associate Professors: Butts; Hasenstab; King, M.
 Associate Clinical Professor: Shim
 Assistant Professor: Jackson, A.
 Assistant Clinical Professors: Atiyeh; Dalton; Gill, J. A.; Giordano; Middleton; Shaia
 Clinical Instructors: Clarke; Dodd; Hayden; Hecker; Hickman; Kreisler; Ryals; Wilkes
 Clinical Associate: Creech

DEPARTMENT OF PATHOLOGY

Professors: Vennart (Chairman); Abbey; Dalton; dos Santos; Draper, D.; Duma; Escobar; Ferry; Fisher; Frable, W.; Gander; Gerszten; Ghatak; Gruemer; Guzelian; Hadfield; Hossaini; James, G. W., III; Johnston; Kohout-Dutz; Madge; Moore; Patterson, J. W.; Rosenblum; Salley; Schatzki; Schwartz, L. B.; Scott, R. B.; Shadomy, H. J.; Shadomy, S.; Shiel; Sirica; Wiecking
 Clinical Professors: Carroll; McMullan, F.; Thornton
 Associate Professors: Allison, T.; Burns; Fierro, M.; Hard; Kaugars, G.; Loria; Mayhall; Meier; Miller, W. G.; Mills; Mohanty; Moncure; Nakoneczna; Page; Poklis; Rodriguez; Strom; Svirsky; Valentour; Ware; Webb
 Associate Clinical Professors: Beck; Briere; Goodwin; Griffin; Hershberg; Kramer; Lambert; McGehee; Notebart

Assistant Professors: Bechard; Carr; Clark; Coudron; Farris; Fowler; Griffith; Johnson; Kornstein; Lawrence; Lynch; Saady; Schuetz; Todd; Wakely
 Assistant Clinical Professors: Armstrong; Buddington; Carpenter; deBlois, G.; Dunn, H.; Gutierrez; Hoke; Kipreos; Klimock; Koopmeiners; Lovering; Pinto; Smith, G. E., Jr.; Thomas, C.; Thomas, G.; Warren

DEPARTMENT OF PEDIATRICS

Professors: Maurer (Chairman); Adler; Brookman; Bundy; Chan; Draper, D. A.; Foreman; Gutchner; Kendig; Kirkpatrick; Mauck, H. P.; Mickell; Myer, E.; Nance; Ownby; Resnick; Roth; Salzberg; Schieken; Wolf; Young; Zanga
 Clinical Professors: Arnold; Massie; Miller; Schulman
 Associate Professors: Berman; Bruch; Campbell; Cockrell; Dunn, N.; Graham; Kaplowitz, T.; Leshner; Moskowitz; Mueller; Rizzo; Robertson; Rodriguez; Russell
 Associate Clinical Professors: Bright; David, R.; de la Burde; Dewitt; Hudgens; Rahal; Solomon; Weinstein
 Assistant Professors: Bodurtha; Bush; Goble; Hartenburg; Hazra; Henderson; Irani; Kerkering; Koch; Krummel; Lucking; Massey; Mellis; Metz; Narla; Pellock; Perr; Rozycki; Saunders; Schoettle; Shropshire; Smith-Harrison; Snead; Spence; Wakely; Ward
 Assistant Clinical Professors: Albrecht; Andrews; Arkin; Austin, L. A.; Blumberg; Bones; Brandt; Burch; Caldron; Colley; Davidow; Dunston; Fidler; Gewanter; Hanzel; Herman; Hunt; Jaffee; Jaworski; Johnston; Kannan; Kellett; Kessel; Kirchmeyer; Kraft; Krebs; Leverty; Liner; Mistr; Mollen; Moore, F. P.; Overton; Payne; Pinkerton; Prince; Radcliffe; Reams, P.; Robinson; Terry; Tipton; Weinstein; Wells; Wiley
 Clinical Associates: Curry; Dwyer; Wilkerson
 Clinical Instructors: Abernathy; Andrako, J. D.; Austein; Barringer; Bell; Boatwright; Brennan; Campbell; Kern; King, A.; Kuperminc; Lee, R. M.; Lum; Mahoney; Malliet; Meloy; Mohagheghi; Morris; Myer, M.; Shayne; Shreve; Stephens

Division of Adolescent Medicine

Professor: Brookman (Chairman)

Division of Pediatric Rehabilitation

Professor: Ownby (Chairman)
 Associate Professor: Cockrell

Division of Community Pediatrics

Professors: Kirkpatrick (Chairman); Bundy

Division of General Pediatrics and Emergency Care

Professors: Zanga (Chairman); Draper
 Associate Professors: Bruch; Campbell
 Assistant Professors: Hazra; Henderson; Mellis; Saunders; Shropshire

Division of Neonatal-Perinatal Medicine

Professor: Gutchner (Chairman)
 Associate Professor: Mueller
 Assistant Professors: Kerkering; Rozycki

Division of Pediatric Allergy/Immunology/ Pulmonology

Professor: Kendig
Associate Professor: Rodriguez (Chairman)
Assistant Professor: Irani

Division of Pediatric Cardiology

Professors: Schieken (Chairman); Mauck
Associate Professors: Moskowitz; Robertson
Assistant Professor: Goble

Division of Pediatric Critical Care Medicine

Professor: Mickell (Chairman)
Assistant Professors: Lucking; Metz; Schoettle

Division of Pediatric Gastroenterology

Associate Professors: Berman (Chairman); Graham
Assistant Professor: Perr

Division of Pediatric Genetics, Endocrinology, and Metabolism

Professors: Roth (Chairman); Nance; Wolf; Young, R. B.
Associate Professors: Kaplowitz; Rizzo
Assistant Professors: Bodurtha; Spence; Stevens

Division of Pediatric Hematology/Oncology

Professor: Maurer
Associate Professors: Russell (Chairman); Dunn
Assistant Professor: Massey

Division of Pediatric Infectious Disease

Professor: Adler (Chairman)
Assistant Professor: Koch

Division of Pediatric Nephrology

Professors: Chan (Chairman); Foreman

DEPARTMENT OF PREVENTIVE MEDICINE

Professors: Smith, M. N. (Interim Chairman); Danish;
Kenley; Luke
Clinical Professors: Buttery; Schifrin
Associate Professors: Anderson; Cooper; Mazmanian;
Peeples; Rice; Rossiter; Vance
Associate Clinical Professors: Armstrong; Stroube
Clinical Instructor: Wood

DEPARTMENT OF PSYCHIATRY

Professors: Silverman (Chairman); Eaves; Falck, H.;
Harkins; Kendler; MacLean; Narasimhachari; Resnick;
Schnoll; Singh
Clinical Professors: Brown; Clower; Foster; Friedel;
Goldberg; McDonough; Silberman; Victor; Williams
Associate Professors: Cohen, R.; Corazzini; Elliott;
Hamer; Hart; Julius; Kaplan; Levenson; Mullaney;
Olbrisch; O'Shanick; Pandurangi; Shenoy; Weber
Associate Clinical Professors: Buxton; Camp; Christian C.;

Corcoran; Draper, W.; Ettigi; Friedenber; Gomez;
Green; Griffin; Hauser; Lindemann; Master; Peed;
Russell; Schmidt; Schumann; Shield
Assistant Professors: Atri; Al-Mateen; Baskett; Blum;
Boon; Brink; Butler; Christian, F.; Colenda; Corretjer;
Culbert; Diehl; Dougherty; Duke; Fehr; Gilliam; Haller;
Hayes; Horvath; Karan; Kelly; Klinger; Knisely;
Kornstein; MaCall; Macurik; Mattocks; McCormick;
McKenzie; Mishra; Morin; Nelson; Parham; Parmelee;
Pelonero; Reid; Reilly; Riley; Robertson; Snead; So-
nenklar; Sood, A.; Sood, R.; Theogaraj; Thomas;
Urbach; Wade; Winfrey; Wolber; Wood
Assistant Clinical Professors: Armstrong; Berg; Bick;
Bloomfield; Boettcher; Bottlinger; Bowen; Carter;
Davis; Dowdy; Ehrmantraut; Entin; Erfe; Falcon;
Fisher, D. G.; Forbes; Forssmann-Falck; Harp; Holland,
H.; Hulbert, M.; Hulburt, D.; Jones, D.; Joseph; Koller;
Kriegman, L.; Lewis; Little; Lowe; Makarowsky; Mar-
cus; Markowitz; Masri; McLaughlin; Montgomery;
Nelson, B. W.; Peck; Petrella; Petry, R.; Pierce; Schlo-
bohm; Shepard; Wouters; Zaller
Instructors: Adkins; Ferriss; Feuer; Gottlieb; Hosick;
Kurgans; Monaco; Wiley
Clinical Instructors: Binford; Brooks, K.; Burke, W.;
Curtis; Deaton; Foster, H.; Garland; Garten; Hadeed;
Hoffman; Hopkins; Hudson, J.; Jennings; Johnson;
Jones, K.; Kernodle; Kowler; LaGow; May; McLean;
Morris, H.; Nalls; Reif; Sale; Scavullo; Sellman; Singh;
Spanier; Spector; Torres-Lisboa

Division of Child Psychiatry

Professor: Singh
Associate Professor: Cohen, R.
Assistant Professors: Parmelee (Chairman); Boon; Brunk;
Kelly; Parham; Reid; Snead; Sood, A.; Sonenklar
Instructors: Gottlieb; Hosick; Wiley

Division of Clinical Psychology

Professor: Resnick (Chairman)
Associate Professors: Hart; Olbrisch
Assistant Professors: Butler; Culbert; Haller; Morin; Riley;
Thomas; Wade

Division of Consultation/Liaison Psychiatry

Associate Professors: Levenson (Chairman); Hart;
Olbrisch; O'Shanick
Assistant Professors: Culbert; Haller; Klinger; Kornstein;
Morin; Wade

Division of Ambulatory Care Psychiatry

Assistant Professors: McCormick (Chairman); Christian;
Fehr; Kornstein; McKenzie; Mishra; Riley; Sood, A.;
Thomas

DEPARTMENT OF RADIATION ONCOLOGY

Professors: Schmidt-Ullrich (Chairman); Lin
Associate Professors: Mikkelsen; Zwicker
Assistant Professors: Ali; Chan; Choi; Haney; Howells;
Johnson; Kaufman; Mitev; Sung; Tercilla; Valerie

DEPARTMENT OF RADIOLOGY

Professors: Proto (Interim Chairman); Eisenberg; Fratkin; Hirsch; Kishore; Neal; Sharpe; Tatum; Tisnado; Turner; Walsh

Associate Professors: Braun; Brewer; Broga; Burke, T.; Fatouros; Fields; Floyd; Henry; Messmer; Montour; Turner; Rehr; Wilson

Associate Clinical Professors: Bassham; Haden; Howell; Myles; Talley; Vinik; Walker

Assistant Professors: Austin; Balserio; Bentley; Bosch; Conway; Coppage; Hayes; Jolles; Kraft; Laine; Lalwani; Lewis; Liu; Nadel; Narla; Pandey; Perdikaris; Prasad; Shah; Shaw; Stringer; Wasseen; Wist; Woodlief

Assistant Clinical Professors: Bredrup; Cabrera; Calkins; Cockrell; Faunce; Galston; Girevendulis; Grizzard; Hughes; Hulick; Jones; King, D.; Konerding; Newsome, B.; Roberts; Rubis; Savage; Smithson; Southworth; Wadsworth

Clinical Instructors: Brendlinger; Cefala; Shivel; Spencer, H. S.; Winkler

Division of Diagnostic Radiology

Professors: Eisenberg; Kishore; Neal; Proto; Tisnado; Turner; Walsh

Associate Professors: Henry (Interim Chairman); Braun; Brewer; Fields; Floyd; Messmer

Assistant Professors: Austin; Bentley; Bosch; Conway; Coppage; Hayes; Jolles; Laine; Lewis; Liu; Nadel; Narla; Prasad; Shah; Shaw; Stringer; Wasseen; Woodlief

Division of Nuclear Medicine

Professors: Fratkin (Chairman); Hirsch; Sharpe; Tatum

Associate Professors: Burke; Rehr

Assistant Professor: Balserio

Division of Radiation Physics

Associate Professors: Fatouros (Chairman); Broga

Assistant Professors: Kraft; Lalwani; Pandey; Perdikaris; Wist

Division of Radiobiology

Associate Professors: Montour; Wilson

DEPARTMENT OF REHABILITATION MEDICINE

Professors: Hayes; Mellette; Wehman

Clinical Professor: Park

Associate Professors: Cockrell; Kreutzer

Assistant Professors: Rucker (Chairman); Coplin; Cyr; Gudas; Liguori; McKinley; Wright; Zasler

Clinical Instructor: Decker

DEPARTMENT OF SURGERY

Professors: Wechsler (Chairman); Adelaar; Brooks, J. W.; Campbell; Cardea; Clifton; Cohen, I. K.; Hayes; Haynes; Horsley; Kellum; Koontz; Laskin; Lawrence; Lee, H. M.; Marmarou; McGuire; Neifeld; Newsome; Parker, G.; Smith, M. J. V.; Sugerman; Young, H.

Clinical Professors: Atwill; Carpenter; Clary; Coleman, C. L.; Cox; Davis; Deyerle; Gwathmey; Hill; Hoover;

Johns, T.; McDowell; Williams, C.; Zimberg

Associate Professors: Abd-Elfattah; Bear; Diegelmann; Friedman; Gervin, A.; Giglio; Guerraty; Guisto; Hackler; Hussey; Jenkins; Lofland; Loughran; Lutz; Mehrhof; Muizelaar; Nogi; Posner; Reines

Associate Clinical Professors: Banner; Beazley; Bryson; Carter; Caspari; Dodson; Harrison; Natvig; Nevin; Oates; Olshansky; Royster; Talman; Ware, J. L.; Williams, A. M.

Assistant Professors: Appley; Carr; Chandler; Cook; Damiano; Diener; Dillon; Gervin, C.; Greenstein; Guttu; Lyeth; Maragh; Nogi; Phillips; Salter; Sharps; Smith-Harrison; Sobel; Strauss; Susskind; Wornom

Assistant Clinical Professors: Anthony; Beazley; Bosher; Brown, P.; Burger; Butterworth, J. F.; Butterworth, T. R.; Carrico; Clary; Dalton; Darden; Doss; Drummond; Eagles; Evans, M.; Fleming; Gardner; Gayle, W.; Hakala; Hulvey; Hutcher; Hyslop; James; Kell; Kendrick; Knaysi; Koziol; Kurup; Mauck, W. R.; May; Merritt; Meyers; Nachman; Olshansky; Packer; Petty; Pole; Poulos; Rawls; Riley; Robertson; Rowe; Sahni; Seitz; Selph; Singer; Stalker; Stuart; Talman; Tunner; Whipple; Whitley; Wright; Yancey

Clinical Associate: Byrd

Instructors: Bailey, P.; Gould; Hughes; Salai

Clinical Instructors: Bigley; Boone; Bowman; Boyer; Carrigan; Christie; Clements; Concodora; Crosier; Davidson; Duck; Feminella; Frederick; Freeman, D.; Gomulka; Haines; Hencereth; Hodgkinson; Johnson, G. W.; Johnstone; Jones, S. H.; Lublin; Mathews; Melzig; Pilcher; Rabhan; Redman; Rowland; Velo; Watkins; White, W.; Wilson, H. H., Jr.

Division of Cardiac and Thoracic Surgery

Professors: Wechsler (Chairman); Brooks, J. W.

Associate Professors: Abd-Elfattah; Guerraty; Lofland

Assistant Professors: Damiano; Salter

Instructors: Bailey, P.; Hughes, R.; Salai

Division of Neurological Surgery

Professors: Young, H. (Chairman); Clifton; Hayes; Marmarou

Associate Professors: Jenkins; Lutz; Muizelaar

Assistant Professors: Appley; Lyeth; Phillips

Division of Oral and Maxillofacial Surgery

Professors: Laskin (Chairman); Campbell

Associate Professors: Giglio; Friedman

Assistant Professors: Chandler; Diener; Guttu; Strauss

Division of Orthopedic Surgery

Professors: Cardea (Chairman); Adelaar

Associate Professors: Hussey; Loughran; Nogi

Assistant Professors: Carr, J.; Sharps

Division of Pediatric Surgery

Assistant Professor: Dillon

Division of Plastic and Reconstructive Surgery

Professor: Cohen, I. K. (Chairman)

Associate Professors: Diegelmann; Mehrhof
Assistant Professors: Maragh, H.; Wornom

Division of Surgical Oncology

Professors: Lawrence (Chairman); Horsley; Neifeld; Parker, G.
Associate Professor: Bear
Assistant Professor: Susskind

Division of Trauma and General Surgery

Professors: Newsome (Chairman); Haynes; Kellum; McGuire; Sugerman
Associate Professors: Gervin, A.; Guisto; Reines
Instructor: Gould

Division of Vascular and Transplantation Surgery

Professor: Lee, H. M. (Chairman)
Associate Professor: Posner
Assistant Professors: Cook; Gervin, C.; Sobel

Division of Urology

Professors: Koontz (Chairman); Smith, M. J. V.
Associate Professor: Hackler
Assistant Professors: Greenstein; Katz, G.; Smith-Harrison

BASIC HEALTH SCIENCES — Basic health science courses are incorporated into the curriculum of the medical students. For details on courses and faculty in the Departments of Anatomy, Biochemistry and Molecular Biophysics, Biostatistics, Human Genetics, Microbiology and Immunology, Pharmacology and Toxicology, Physiology, and the Program in Biomedical Engineering, see Part VI, School of Basic Health Sciences.

DEPARTMENT OF PATHOLOGY

The Department of Pathology of the School of Medicine offers the Master of Science and Doctor of Philosophy degrees. Requirements for admission and academic performance are the same as for graduate programs in the School of Basic Health Sciences.

Courses of Instruction (PAT)

301 Basic Pathology. Semester course; 12 lecture and 11 laboratory hours. 3 credits. Instruction focuses on the pathologic mechanisms and progression of selected diseases. Tissue changes are studied primarily at the gross level.

509 Basic Immunohematology. Semester course; 3 lecture hours. 3 credits. A study of the blood groups in man, their mode of inheritance, and clinical significance.

510 Basic Clinical Immunohematology. Semester course; 4 lecture hours. 4 credits. Prerequisite: PAT 509 or permission of instructor. Collection, storage, and preservation of blood

with indications for the transfusion of blood, blood components, and derivatives. Hazards and complications of blood transfusion will also be discussed in detail.

515 Problems in Neuroscience. 3 lecture hours. 3 credits. I. This multidisciplinary pathology/neuroscience course is designed to provide graduate students, residents, and others with a broad, updated, and integrated overview of neuropathology and the other neurosciences. Basic molecular and cellular principles of neurobiology are brought to life by selected clinical correlations and applications. The lectures introduce major CNS pathways and systems in conjunction with basic and advanced neuropathological principles. The disease topics are cohesively taught from several points of view by specialized faculty drawn from many departments, clinical and basic.

521 Clinical Chemistry. Semester course; 3 lecture hours. 3 credits. Prerequisite: permission of instructor. Principles and applications of automation and instrumentation to the analysis of biological fluids in health and disease. May be repeated up to 12 credits.

522 Clinical Chemistry. Semester course; 3 lecture hours. 3 credits. Prerequisite: permission of instructor. The metabolic basis of disease and the interpretation of laboratory data for diagnosis and patient management. May be repeated up to 12 credits.

530 Clinical Immunopathology. Semester course (second semester only); 2 lecture and 6 laboratory hours. 5 credits. Prerequisite: MIC 506 or equivalent. Application of immunologic methods to disease diagnosis and management with emphasis on immunopathogenetic mechanisms of organ systems: endocrine, lympho-reticuloendothelial, renal, gastrointestinal, cardiopulmonary, skin, neurologic, etc. Technical aspects of testing, test interpretation, and clinical case presentations will be intermingled to provide a comprehensive understanding of clinical immunopathology and its role in patient care.

590 Experimental Pathology Seminar. Semester course; 1 lecture hour. 1 credit.

601 General Pathology (Dentistry). Semester course; 3 lecture and 6 laboratory hours. 6 credits. Instruction in the basic principles regarding alteration of structure and function in disease and in the pathogenesis and effect of disease in the various organ systems.

602 Experimental Pathology of Infectious Disease. Semester course; 2 lecture and 6 laboratory hours. 5 credits. Autopsies and histopathology are studied to acquaint the graduate student with infectious disease pathology. Various animal and other models are used to demonstrate pathogenesis of some infections and other inflammatory mechanisms.

606 Biochemistry of Disease. Semester course; 2 lecture hours. 2 credits. Prerequisite: BIC 503. A detailed study of the biochemical mechanisms involved in the pathogenesis of certain diseases.

610 Physiology of Blood Coagulation. By special arrangement with instructor. Semester course; 1 lecture and 4 laboratory hours. 3 credits. Prerequisites: BIC 503 and PIO 502. The historical development of bleeding and clotting disorders with current diagnostic methodology and treatment.

612 Viral Immunohistopathology and Serodiagnosis. 3 lecture and 4 laboratory hours. 5 credits. In-depth treatise of immunologic and immunopathologic mechanisms of viral diseases, focusing on organ systems: neurologic, immunologic, hematopoietic and lymphatic, gastrointestinal, cardiopulmonary, dermatologic, genitourinary, etc. Findings based on histopathology and immunocytochemistry, using the latest clinical laboratory methods, will be applied to diagnosis and management of the patient with acute, latent, or chronic viral infection. Technical aspects of methodology, test interpretation on the basis of clinical information, and clinical case presentations in the actual hospital setting will be intermingled to provide a comprehensive understanding of diagnostic virology and its role in patient care.

614 Pathogenesis of Infectious Disease (Bacterial Agents). Semester course; 2 lecture and 4 laboratory hours. 4 credits. Prerequisite: MIC 515 or equivalent. Emphasis is on the pathogenesis and epidemiology of infectious disease. The dynamic interaction among the host, microorganism, and environment are documented using the data obtained from MCV Hospitals. Students have the opportunity to apply laboratory data and techniques to present microbiological problems in clinical areas.

615 The Pathobiology of Experimental Animal and Human Neoplasia. 2 lecture hours and 4 laboratory hours. 4 credits. An advanced lecture/laboratory course covering relevant topics in chemical, viral, and radiation carcinogenesis, genetic aspects of neoplastic disease, the biochemistry and molecular biology of cancer, and the pathological features of neoplastic disease. The laboratory provides a background in recognizing the appearance and characteristics of various types of neoplasms in experimental animals and in man.

690 Clinical Chemistry Seminar. Semester course; 1 lecture hour. 1 credit. Graduate students, residents, and staff present topics of current interest in clinical chemistry.

691 Special Topics in Modern Instrumental Methods. By special arrangement with instructor. Semester course; 1 lecture and 2 laboratory hours. 2 credits. A study of some of the modern research methods of molecular biology. The student gains experience with the technique concomitant with discussions with faculty. The student writes a comprehensive review of the technique studied.

697 Research in Pathology. 1–15 credits. Research leading to M.S. or Ph.D. degree and elective research projects for other students.

Master of Public Health Program

The program in public health prepares persons for a broad range of leadership positions in academia, private industry, and in local, state, national, and international health organizations. The multidisciplinary curriculum is designed for students who generally are either: 1) health workers seeking advanced study and career development; 2) health science graduate students who desire to combine their specialties with public health; and 3) recent baccalaureate graduates interested in public health careers.

A core curriculum in public health is combined with a curricular tract in a specific area of the student's specialty, expertise or career goals. Public health studies provide the knowledge and skills to: 1) identify, analyze, and interpret data related to disease surveillance, community health diagnosis, and program development; 2) implement and evaluate health services within contemporary complex health care systems; and 3) analyze and interpret social, economic and political factors that influence health and disease in populations and the direction of a community health response. Specialty tracts are available in epidemiology, preventive medicine, and community occupational or international health.

Study for the M.P.H. degree can be undertaken on a full- or part-time basis. Thirty-six hours of course work and a practicum are required to complete the program.



PART III — School of Dentistry

LINDSAY M. HUNT, JR., D.D.S., Ph.D.

Dean

JAMES H. REVERE, JR., D.D.S.

Executive Associate Dean

MARSHALL P. BROWNSTEIN, D.D.S.

Assistant Dean for Admissions and Student Affairs

JAMES E. HARDIGAN, Ph.D.

Assistant Dean for Administrative Affairs

HARVEY A. SCHENKEIN, D.D.S., Ph.D.

Assistant Dean for Research

F. B. WIEBUSCH, D.D.S.

Assistant Dean for Continuing Education

K. JOSEPH WITTEMANN, Ph.D.

Assistant Dean for Academic Affairs

The School of Dentistry was created in 1893 when the University College of Medicine opened with a dental department as one of its original divisions. The Medical College of Virginia inaugurated a dental education program in 1897, and in 1913 the two schools were merged to form the MCV School of Dentistry.

The facilities of the School of Dentistry are housed in the Wood Memorial and Lyons Buildings and contain clinical facilities, classrooms, student laboratories, group study rooms with individual study alcoves, departmental offices, and closed circuit color television studios with receiver units in laboratories and classrooms.

The school provides opportunities for selected, qualified individuals to study dentistry under the most favorable conditions and in accordance with the standards established by the Council on Dental Education of the American Dental Association. The requirements for admission have the approval of the Virginia State Board of Dental Examiners and are acceptable

to dental licensure boards of all other states and the District of Columbia.

The degree of Doctor of Dental Surgery is awarded to graduates.

MISSION OF THE SCHOOL OF DENTISTRY

The primary mission of the School of Dentistry is to educate practitioners of dentistry capable of meeting the general oral health care needs of the communities they serve. Within this educational mission is the explicit responsibility to provide future practitioners with the analytical and technological skills which will allow them to be efficient providers of quality oral health care to the public, to be responsive to future changes in the profession, to be lifetime learners, and to advance dental knowledge.

Integral parts of the mission are the responsibility for the school to assume a prominent role in research and other scholarly activity, to provide service and patient care to the community, and to develop leaders in education and organized dentistry. Consistent with the primary mission, the School of Dentistry provides programs in dental specialties, dental hygiene, and continuing education.

ADMISSION REQUIREMENTS

A minimum of 90 semester hours (or equivalent) in an accredited college or university is required. Required courses are general biology, general chemistry, organic chemistry, physics,

and English. Laboratory experiences are required for those courses where applicable. Biology courses should emphasize zoology rather than botany. Courses in biochemistry, general microbiology, the behavioral sciences, and courses involving psychomotor skills are strongly recommended. Academic credits presented by an applicant must be acceptable for credit toward a degree in the institution in which the courses are taken. Only one of the required courses may be taken during the year application is made. However, accepted students must document completion of required courses and 90 semester credits before registration can occur.

Participation in the Dental Admission Test (DAT) of the American Dental Association is required. It is recommended that this test be taken by the year preceding intended matriculation. Applicants are encouraged to take the examination more than one time. The best set of scores is used as the official set.

Selection Factors

The Medical College of Virginia of Virginia Commonwealth University is a state-supported, public university and gives admission preference to state residents. All applicants are evaluated by uniform criteria without regard to national origin, color, race, age, religion, or sex.

Students are selected by the Admissions Committee on the basis of excellence of pre-dental education, DAT scores, recommendations, and results of personal interviews with members of the committee. The interview process is standardized and designed to determine motivation, knowledge of and interest in the dental profession, and to afford the applicant an opportunity to provide additional information pertaining to his/her application. Members of minority groups underrepresented in dentistry are encouraged to apply.

Application Procedures

The School of Dentistry participates in the American Association of Dental Schools Application Service (AADSAS). All applicants are required to submit credentials through this service. Application forms can be obtained from AADSAS, P.O. Box 4000, Iowa City, IO 52240, pre-dental advisors in colleges and universities, and the Office of Student Affairs, School of Dentistry, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA 23298-0566.

Application to the School of Dentistry can be made through AADSAS on or after June 1 and must be received by AADSAS not later than March 1 of the year preceding intended matriculation.

AADSAS compiles academic records and other pertinent information and forwards these with the application to the School of Dentistry. Qualified applicants are then requested to submit supplemental information, such as letters of recommendation, by March 15 of the year in which admission is desired. The application fee is \$35.

Applicants will be notified of decisions according to guidelines established by the American Association of Dental Schools. Within 30 days following notification of acceptance, the applicant is required to deposit \$200 toward tuition for the first year. After February 1, the deposit must be received within two weeks following notification of acceptance. A second deposit of \$100 toward tuition is due on May 1. Both deposits are nonrefundable.

A letter of acceptance offers the candidate a position in the class entering for the session cited. Receipt by the Office of Admissions and Student Affairs of the initial \$200 nonrefundable tuition deposit within the prescribed period reserves the position in the class. Failure to reserve a position results in that position being offered to another candidate. The second \$100 nonrefundable tuition deposit initiates active administrative processing of matriculation into the first-year class. Failure to send this deposit results in loss of position, and the position is then offered to another candidate.

The act of matriculation also implies a willingness on the part of the student to comply with University rules and regulations, to take an interest in maintaining the ideals of the institution, and to conduct himself/herself in a manner befitting a member of the dental profession.

SCHOOL OF DENTISTRY — READMISSION FOLLOWING A HEALTH-RELATED WITHDRAWAL¹

Health-related withdrawals will be granted, except in unusual circumstances, for the remaining portion of the academic year in which withdrawal is approved. In no event will withdrawal exceed one academic year.

¹This policy statement applies to the School of Dentistry and supplements the *University Policy on Health-Related Withdrawals*.

A student in the School of Dentistry who was granted a health-related withdrawal and fails to notify the dean by the March 1 preceding the academic year in which studies are to be resumed (declaring his/her intent to return to school), ceases to be a student in the School of Dentistry, forfeits the right to return without reapplication, and must reapply through appropriate procedures if readmittance is desired.

First-year students who forfeit must reapply for a freshman class using the AADSAS system and, if admitted, will be considered first-year students with associated rights and responsibilities. Forfeiting students who withdraw from second-, third-, or fourth-year classes must apply in writing for admission with advanced standing according to established procedures.

Students who are readmitted will receive credit for only those courses which have been completed and a final grade rendered prior to withdrawal.

Retention of credit for clinical requirements earned prior to withdrawal will be at the discretion of the appropriate department chairman.

Students who are approved by the dean for nonhealth-related reasons or students who withdraw unofficially must apply for readmission with advanced standing.

ADMISSION WITH ADVANCED STANDING

The School of Dentistry will consider applicants for admission with advanced standing on an individual basis depending upon positions available and qualifications of the applicant.

FINANCIAL ASSISTANCE

A brief description of financial aid based on demonstrated need is contained in Part I of this bulletin. Financial need-based aid programs available to dentistry students include Health Professions Student Loan, Perkins/National Direct Student Loan, State Dental Practice Scholarship, Virginia Dental Association Student Loan Program, and institutional loans. Further information on the State Dental Practice Scholarship Program may be obtained from the Office of Admissions and Student Affairs of the School of Dentistry. Information on the others may be obtained from the MCV Campus Financial Aid Office.

HONORS

Students in each class who achieve at least a 3.2 grade-point average for the previous year are

selected for the Dean's List.

The School of Dentistry has a chapter of Omicron Kappa Upsilon, the national honorary dental society. Each year the society selects those students who, in addition to scholarship, have demonstrated exemplary traits of character and potential qualities of future professional growth and attainments.

A certain percentage of junior and senior students are selected each year to become members of Sigma Zeta and Alpha Sigma Chi, honorary scientific societies.

The Alpha Omega Scholarship Award is presented to the graduating student who has attained the highest scholastic rating for his/her four years of dental study.

At the end of each academic year, senior students are recognized for their outstanding achievements in various dental areas. Awards are presented at the annual Honors and Awards Convocation to which students, parents, and faculty are invited.

A. D. Williams Award. An annual stipend may be made, on the nomination of the faculty, to a student in each class who demonstrates, by virtue of high scholastic attainment and professional performance, unusual promise and ability. Character, motivation, intellectual curiosity, and realization of the opportunities for intellectual development will be considered in the award which is made at the end of the academic year.

CURRICULUM LEADING TO THE D.D.S. DEGREE²

The curriculum in the dental school is organized into a four-year program leading to the Doctor of Dental Surgery (D.D.S.) degree. The academic year begins in June and extends through May. The program emphasizes study in three broad areas: basic sciences, clinical sciences, and social sciences.

The basic sciences include in-depth study of anatomy, biochemistry, genetics, microbiology, pathology, pharmacology, and physiology.

The clinical sciences prepare the student for the actual practice of dentistry and provide exposure to the various specialties in dentistry.

²In general, courses offered as part of the curriculum in dentistry are not available to other students in the University. Exceptions may be granted by the dean, School of Dentistry, to students enrolled in graduate degree programs upon written request of the chairman of the department in which the student is seeking a degree.

The behavioral sciences cover such topics as dental health needs, the system of health care delivery, practice management, professional ethics, and behavioral factors.

Laboratory and clinical experiences are offered throughout the four years to develop within the student the skills vital to the practice of general dentistry.

CURRICULUM

Freshman, First Semester

		Lecture	Clock Hours Laboratory	Clinic
ANA 501	Gross Anatomy	88	124	
BIC 501	Biochemistry	65	12	
ANA 503	Neuroanatomy	18	3	
DEN 501	Introduction to Prevention	9		
DEN 510	Scientific Inquiry	10		
GEN 531	Dental Genetics	24		
RED 510	Dental Materials	14		
RED 511	Dental Anatomy	37	62	

Freshman, Second Semester

PIO 502	Mammalian Physiology	80		
ANA 502	Microscopic Anatomy	50	81	
DEN 512	Principles of Occlusion	21	45	
RED 512	Restorative Dentistry	18	57	
RED 514	Occlusal Waxing	14		
MIC 513	Infections and Immunity	56	18	

Sophomore, First Semester

ORP 621	Dental Radiology	32		
ORT 623	Preclinical Ortho Lecture (continues in second semester)	15		
RED 621	Operative Dentistry	19	57	
PAT 601	General Pathology	60	58	
DEN 621	Occlusion II	13	29	
REP 623	Preclinical Complete Denture Prosthodontics (continues in second semester)			
RED 620	Cariology	28		
DEN 624	Applied Prevention	12		
PED 622	Pediatric Dentistry II (continues in second semester)			
PER 621	Periodontal Anatomy and the Pathology and Etiology of Periodontal Diseases	23		
PMC 609	General Pharmacology and Pain Control (continues in second semester)			

Sophomore, Second Semester

ORT 623	Preclinical Ortho Lecture	20		
PER 622	Diagnosis and Treatment Planning for Periodontal Therapy	17		
PED 622	Pediatric Dentistry II	30	10	9
END 622	Principles of Endodontics	13	28	
ORP 622	Oral Pathology	32	17	
REP 623	Preclinical Complete Denture Prosthodontics	25	107	
ORS 622	Oral Surgery I	16		
RED 622	Crown and Bridge Technic Course I	34	108	
PMC 609	General Pharmacology and Pain Control	64		
DEN 625	Orientation to Clinics	10		
REP 622	Removable Partial Dentures	32	60	

Junior Year

PMC 611	General Pharmacology and Pain Control	28	4	
ORS 731	Medical Evaluation and Diagnosis	14		
REP 735	Clinical Removal Partial Denture Prosthodontics	27		
REP 733	Complete Denture Prosthodontics	30		
ORT 733	Orthodontic Therapy	14		
ORS 733	Oral Surgery II	26		
ORS 735	Medical Emergencies	10		
END 731	Endodontic Therapy	14		
ORP 732	Clinical Oral Pathology	11		
RED 732	Restorative Dentistry	22		
PER 733	Periodontal Therapy	23		
PED 733	Pediatric Dentistry	26		

Senior Year

LEM 742	Dental Jurisprudence	8
DEN 742	Implantology	10
RED 741	Practice Administration	20
ORS 741	Special Patient Care	16
ORP 741	Oncology	8
DEN 741	Management of Pain in the Head and Neck	10
RED 745	Restorative	10

JUNIOR ROTATIONS³

ORP 737	Radiology Rotation	60
ORP 747	Diagnosis Rotation	(continues in D4 year) 97
RED 747	DAU Clinical Rotation	(continues in D4 year) 48

SERVICE ROTATIONS

Endodontics	12
Occlusion	3
Oral Surgery	50
Primary Care Clinic	66
Pedodontics	5

SENIOR SERVICE ROTATIONS

Endodontics	12
TMJ Clinic	3
Oral Surgery	55
Pedodontics	5
Certification in Cardiac Life Support Program	4 6

CLINIC YEARS (D3, D4)⁴

END 749	Clinical Endodontics	60
ORS 749	Oral Surgery III	96
ORT 749	Clinical Orthodontics	30
PED 749	Clinical Pediatric Dentistry	210
PER 749	Clinical Periodontics	240
RED 749	Clinical Restorative Dentistry	460
REP 749.01	Clinical Complete Denture Prosthodontics	132
REP 749.02	Clinical Complete Denture Prosthodontics	132
REP 749.03	Clinical Partial Denture Prosthodontics	132
REP 749.04	Clinical Partial Denture Prosthodontics	132
DEN 792	Special Studies Program	Variable

SENIOR ELECTIVE CURRICULUM

Recognizing that individual students have different needs and goals, the School of Dentistry offers a didactic/clinically-oriented senior year. Elective courses have been developed so that students who have an interest in further developing competency in a particular area may do so without adherence to a rigid curriculum. In addition, this program allows students who have demonstrated or feel a lack of competence in an area to enhance their educational experience. This program also allows those who have not defined their goals to be exposed to an assortment of courses which may lead to career options they have not yet encountered.

Continuation of clinical assignments and patient care is required during this experience.

Each semester a new elective catalog is published containing courses offered by the various departments and divisions of the School of Dentistry as well as other schools of the University.

Special Studies Program (DEN 792)

The Special Studies Program is an individualized program for qualified fourth-year students which permits the student to focus his/her time and energy in a defined area of study, service, and/or research in the biomedical and clinical sciences and/or delivery of patient care within and outside the school.

ACADEMIC PERFORMANCE GUIDELINES

The faculty of the MCV/VCU School of Dentistry has the responsibility for evaluating the student's academic performance. It is incumbent on the course directors or their designees to specify, at the time that courses first convene, the criteria to be used in student assessment and the standards by which they will be judged.

³These rotations are included in clinical courses during D3-D4 years.

⁴Clock hours represent maximum time available.

The Guidelines which govern the actions of the Academic Performance Committee and which guide the academic activities of the students are distributed to all students at the beginning of their studies. They are available upon request from the Office of Academic Affairs, School of Dentistry.

ADVANCED DENTAL EDUCATION PROGRAMS

The School of Dentistry provides advanced dental education programs in the dental specialty areas of endodontics, oral and maxillofacial surgery, orthodontics, pedodontics, periodontics, and fixed prosthodontics. Satisfactory completion of the program leads to the award of a certificate of training, certifying eligibility for examination by the appropriate specialty board. All programs are accredited by the Commission on Accreditation of Dental and Dental Auxiliary Educational Programs of the American Dental Association. Also, a program is offered for post-graduate training in anesthesiology for dentistry. Those enrolled are full-time resident trainees, considered to be the equivalent of full-time students. Under special circumstances, trainees may be accepted into some programs on a part-time basis.

Applications for admission should be directed to the director of the desired program. Candidates for admission to advanced education programs involving clinical care of patients must be eligible for dental licensure in Virginia.

Endodontics

Program Director: R. Neil Dodds, D.D.S.

The advanced education program in endodontics is designed to educate qualified individuals to pursue careers as teachers, researchers in the biological sciences, and practicing specialists of endodontics.

The basic 22-month certificate program is composed of two interrelated phases. The first consists of lecture courses which provide the student with a firm biological basis for patient care. The second phase consists of lectures, seminars, and clinical training which is designed to produce clinical proficiency. Research experience is gained through the completion of an individual research project. The entire program conforms to guidelines established by the American Board of Endodontics and the Education Committee of the American Association of

Endodontics, and the Commission on Accreditation (A.D.A.).

Since the major emphasis of the program is on teaching and research, students have the option, within an expanded time frame, to seek advanced degrees (M.S. or Ph.D.). The curriculum is designed on an individual basis by the basic sciences advisor and the director of post-graduate endodontics.

Oral and Maxillofacial Surgery

Program Director: Daniel M. Laskin, D.D.S., M.S.

The oral and maxillofacial surgery program is designed to provide extensive didactic and clinical experience in all aspects of the specialty. Those who complete the four years of training satisfactorily fulfill the prerequisites for examination and certification by the American Board of Oral and Maxillofacial Surgery.

The didactic portion of the program includes formal courses in oral pathology, anatomy, and physical diagnosis, as well as numerous weekly conferences and seminars. Clinical rotations on oral pathology, anesthesia, medicine, surgical oncology, neurosurgery, cardiology, plastic surgery, emergency room, and the trauma services are used to supplement the trainee's surgical experience. Throughout the program there is a constant correlation of the clinical experience with the biomedical sciences.

Through the multiple clinical and didactic facilities of the MCV/VCU medical center complex and the McGuire Veterans Administration Medical Center, there is ample material for education in the latest oral and maxillofacial surgical techniques. The oral and maxillofacial surgery service is responsible for diagnosis and management of diseases and injuries related to the oral and facial region. Trainees are involved in all aspects of treatment including simple and complicated oral surgery, anesthesia and pain control, oral and maxillofacial trauma, preprosthetic surgery, orthognathic surgery, oral and paraoral pathology, oral and maxillofacial reconstruction, temporomandibular joint surgery, and microneuro- and microvascular surgery. During the four years, the trainee assumes ever-increasing responsibilities as time and abilities dictate.

Upon satisfactory completion of the four-year residency, the trainee may earn the Doctor of Medicine degree from the School of Medicine by

enrolling in the second and third years of that curriculum. This is followed by a one-year residency in general surgery at MCV Hospitals to complete the combined program.

Orthodontics

Program Director: Robert Isaacson, D.D.S.

The 24-month advanced education program in orthodontics is offered under the auspices of the School of Dentistry through the Department of Orthodontics. The curriculum provided by the school and department is composed of seminars and small group instruction with emphasis on critical thinking and problem solving. These offerings contain no formal coursework, nor does the student register, pay tuition, or receive a transcript. No stipends are available. Interdepartmental programs include a regular weekly orthognathic surgery conference. Other coursework is available from the basic science departments. Students who wish to enroll in basic sciences courses are required to register for the courses, pay the appropriate tuition and fees, and receive a university transcript. Successful completion of the program and eligibility for the limited practice of orthodontics are certified by the faculty in orthodontics. The primary emphasis of this certificate program is on clinical competence and includes the coordination of treatment with various medical and dental specialties. The completion of a research project is a requirement of the program.

A graduate program, which requires additional time to complete, is also available. In addition to a certificate in orthodontics, this program leads to a Master of Science degree in a basic health science. The curriculum is designed for each individual by the Department of Orthodontics and the basic health science department concerned.

Pediatric Dentistry

Program Director: Arthur P. Mourino, D.D.S., M.S.D.

The advanced dental education program in pediatric dentistry is a 24-month program designed to meet the guidelines of the American Academy of Pediatric Dentistry and the requirements of the Commission on Accreditation of the American Dental Association. It is a combined University- and hospital-based postgraduate program leading to a certificate of advanced

training in pediatric dentistry. In addition, a combined program leading to an M.S. or Ph.D. degree with a clinical specialty in pediatric dentistry is available for interested and qualified individuals.

Emphasis is placed on a diversified educational experience. Teaching and research opportunities supplement the clinical, hospital, and didactic components of the program. The course of study includes clinical experience in the treatment of handicapped as well as normal children, pediatric and hospital rotations, and comprehensive dental care with the aid of general anesthesia. Seminars and formal courses are held in pediatric dentistry and orthodontic diagnosis and treatment planning, growth and development, cephalometric analysis, oral pathology, principles of pediatrics, pharmacology, anesthesiology, head and neck anatomy, learning disorders, basic science, and clinical core courses. Elective courses are available within the University and the School of Dentistry.

Periodontics

Program Director: David L. Cochran, D.D.S., Ph.D.

The advanced education program in periodontics consists of a 24-month curriculum leading to a certificate of training in periodontics. The curriculum includes courses in the basic sciences plus seminars, lectures, and clinics. All provide opportunities for concentrated learning and experience in the clinical specialty of periodontics as well as interaction with interrelated areas of general dentistry and other clinical specialties. The philosophy of the program requires that the student develop capacity for judgment and adaptability from knowledge of basic science and reliance on evaluation of published reports.

For trainees interested in pursuing academic careers, the program may be expanded to include research experience or combined with an M.S. or Ph.D. degree in the School of Basic Health Sciences. The curriculum for the combined residency/degree program is individualized, building upon the requirements for the residency in the basic science department of interest. Combined programs require a minimum of 36 months for completion of requirements for the M.S. degree, and a minimum of 48 months for the Ph.D. degree.

Prosthodontics

Program Director: David A. Beck, D.D.S., F.A.C.P.

The School of Dentistry offers a 24-month program in prosthodontics. Prosthodontics is that specialty of dentistry which endeavors to repair and/or replace the function of the lost or damaged natural dentition. The curriculum combines didactic and clinical instruction in the biology, biomaterials, and clinical application of prosthodontic principles. Teaching is by formal classroom instruction, seminar, and clinical practice. A basic science core curriculum provides instruction in basic human sciences. Prosthodontic instruction is accomplished by seminars and one-on-one clinical instruction. The student is expected to be able to utilize the resources of the medical library in development of seminars and to lead topic-based reviews of the literature. Classes, seminars, and literature review sessions are held weekly during the fall and spring semesters. Clinical instruction is provided year-round. The program follows the School of Dentistry calendar except for the starting date, which is the first weekday in July.

The program is not entirely based upon specific requirements, though certain levels of accomplishment are expected. Didactic requirements are based on performance, attendance, and examination. No grade lower than "C" is acceptable from any basic science course. Prosthodontic instruction includes: fixed, full and partial dentures; removable, complete, and partial dentures; maxillofacial prosthodontics and prosthodontic laboratory procedures; the utilization of implants to support prostheses; and fully adjustable instrumentation, generated path, masticatory dysfunction, and occlusion.

Each student is required to propose, perform, and report on a research topic of choice. Research topics will be submitted, reviewed, and approved by a committee of faculty. Funding is available for the project demands.

The program also requires that students engage in teaching undergraduate dental students.

GENERAL PRACTICE RESIDENCY

Program Director: Richard B. Friedman, D.M.D., M.P.H.

The one-year general practice residency program provides the new dentist with the experience and skills needed for the total care of the

dental patient. Such patients include those requiring adjunct medical support services, those suffering from a variety of medical conditions, and those who are at particularly high risk for infection.

Primary dental care is provided in a number of clinical settings, including the clinics on the MCV Campus and the dental service in the McGuire VA Medical Center. Dental care for the hospitalized patient is provided in both ambulatory and nonambulatory settings.

Rotations in the general practice residency program include anesthesia, medicine, oral pathology, oral surgery, and emergency medicine. Supplementing these rotations is core coursework in physical diagnosis and evaluation as well as lectures, rounds, and seminar series. In the setting of MCV Hospitals, dental residents have the opportunity to participate in conferences and rounds presented by other clinical departments. Dental conferences include treatment planning, literature review, oral pathology slide seminar, oral surgery treatment conference, and departmental rounds.

The faculty include general practitioners, consulting physicians, and specialists from each of the dental specialties. Dental residents are supervised during all phases of treatment in all settings. Competence in the evaluation and management of patients with medical disorders is a major objective of the training program.

POSTGRADUATE TRAINING IN ANESTHESIA FOR DENTISTRY

Program Director: Robert L. Campbell, D.D.S.

A two-year program in anesthesiology and related sciences prepares the graduate dentist with the necessary didactic and clinical skills for a career in teaching or practice. The program combines three didactic courses from the School of Basic Health Sciences, School of Nursing, the educational seminars for the residents in the Department of Anesthesiology, and the physical diagnosis course directed by the Department of Internal Medicine.

Clinical rotations in medicine, cardiology, and anesthesiology are supplemented with weekly assignments in the outpatient anesthesia clinic in the dental school, the temporomandibular and chronic facial pain research clinic, pediatric dentistry sedations clinic, and the ambulatory anesthesia clinic in the oral surgery department at the A.D. Williams Hospital.

For information contact Dr. Robert Campbell, Department of Oral and Maxillofacial Surgery.

COMBINED D.D.S. AND M.S. OR PH.D. PROGRAMS

The dental curriculum provides an opportunity for interested dental students to enter a combined D.D.S./M.S. or Ph.D. program.

Individualized curricula are developed for such students with the approval of the students' advisors in the basic science department of study, the dean of the School of Basic Health Sciences, and the assistant dean for research of the School of Dentistry. Ordinarily, the combined program requires more than four years to complete requirements for both degrees. For further details, see the section on School of Basic Health Sciences.

DENTAL HYGIENE PROGRAM

Program Director: James V. Carpenter, D.D.S.

The Dental Hygiene Program, instituted in 1969, offers courses in the School of Dentistry leading to a Bachelor of Science degree in dental hygiene. The program requires two years of liberal arts study, with a minimum of 60 semester hours, followed by two years of study in dental hygiene. The Dental Hygiene Program is accredited by the Commission on Accreditation of the American Dental Association. Upon successful completion of the program, graduates will be eligible for national, regional, and state board licensure examinations.

PHILOSOPHY AND GENERAL EDUCATIONAL GOALS

The Dental Hygiene Program believes that the modern practicing hygienist needs a broad range of skills to function effectively. Training in particular clinical-technical skills, while essential, will not be sufficient to meet increasing social demands for comprehensive oral health care at all societal levels. The program sees the baccalaureate degree dental hygienist as a key agent, not only in helping the dental profession respond to changing demands, but also in helping to facilitate change itself. Therefore, the baccalaureate degree program in dental hygiene has the following overall goals:

- Perform traditional dental hygiene functions.
- Employ decision-making skills in providing

clinical service in health care and educational programs.

Function under supervision in an extended role in the provision of independent units of service.

Assume a leadership role within political, social, educational, and professional settings to improve the health of all members of society.

Design and implement health programs utilizing principles and theories of learning, health care organizations, behavioral science, and communication skills.

Apply research design and statistics in critiquing professional and scientific literature.

Apply research methodology to design and to evaluate the effectiveness of health care and educational programs.

Administer dental service programs in comprehensive health care units and community settings.

Function as a dental health consultant.

Prepare for graduate and advanced professional programs.

HONORS AND AWARDS

Sigma Phi Alpha is the National Dental Hygiene Honor Society. Elected to membership are senior dental hygiene students who rank highest in scholarship and character and exhibit potential qualities for future growth and attainment as recommended by faculty members. Membership is limited to ten percent of the graduating class and is selected from the upper 20 percent of the class. If 10 percent of the class is fewer than two, a maximum of two seniors may be elected.

Community Dental Hygiene Award. This award, presented annually to a graduating senior dental hygiene student, is based not only on the student's ability to recognize and understand the oral health needs of a community, but also on the demonstrated ability to develop and implement a program to meet those needs.

A certificate is given, and the recipient's name is engraved on a plaque which hangs in the School of Dentistry.

Virginia Dental Hygienists' Association Award. An annual award is made to one graduating senior and is based on the student's scholastic ability, clinical proficiency, and professional contributions. A one-year membership in the American Dental Hygienists' Association and a certificate are presented to the selected student, and the individual's name is engraved on

the school plaque.

A. D. Williams Award. An annual stipend may be made, on the nomination of the faculty, to a student in each class who demonstrates by virtue of high scholastic attainment and professional performance unusual promise and ability. Character, motivation, intellectual curiosity, and realization of the opportunities for intellectual development will be considered in the award, which is made at the end of the academic year.

FINANCIAL AID

Scholarships are available through the American Dental Hygienists' Association and the Virginia State Department of Health. Additional aid is available through loan funds of the Virginia Dental Hygienists' Association, the Virginia Dental Association, and the Financial Aid Office of MCV/VCU. Full information on financial aid is available upon request from the Financial Aid Office, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA 23298-0244.

Dental hygiene students qualify for the National Defense Student Loan Program and the Veterans Administration Benefits.

ADMISSION REQUIREMENTS

Two years of liberal arts study with a minimum of 60 semester hours of transferable quality academic courses are required.

A. Courses

1. Specific

- a. English—I year
- b. Biology
- c. Chemistry—I year
- d. Anatomy and Physiology
- e. Introductory Sociology
- f. Introductory Psychology
- g. Introductory Speech
- h. Basic Statistics

2. Approved electives fulfilling the distribution requirements of the liberal arts college or university currently attending.

B. At least a "C" average must be earned for all work undertaken.

C. A personal interview by a previously arranged appointment may be requested prior to admission.

For further details regarding the Dental Hygiene Program, contact the Director of Dental Hygiene, Medical College of Virginia,

Virginia, Virginia Commonwealth University, Richmond, VA 23298-0566, (804) 786-9096.

For application information, contact University Enrollment Services, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA 23298-0632, (804) 786-0488.

GRADUATION REQUIREMENTS

Graduation requirements are given in the "Academic Performance Guidelines" for the School of Dentistry.

CURRICULUM

The Dental Hygiene Program includes study of the basic, dental, and clinical sciences through lecture, laboratory, clinical, and community experiences.

CURRICULUM—DENTAL HYGIENE

<i>Junior Year, First Semester</i>	<i>Credits</i>
ANA 301 Head and Neck Anatomy (Lecture and Laboratory).....	5
ANA 302 Microscopic Anatomy.....	3
MIC 365 Infection and Immunity (Lecture and Laboratory).....	3
ORP 301 General Pathology	1
ORP 621 Dental Radiology	0.5
RED 311 Dental Anatomy	3
DEH 301 Dental Hygiene I	4
	<hr/> 19.5

<i>Junior Year, Second Semester</i>	
BIO 217 Nutrition	3
ORP 524 Oral Pathology	2
RED 302 Dental Materials (Lecture and Laboratory).....	2
DEH 302 Dental Hygiene II (Lecture and Clinic)	4
DEH 312 Community Dental Health I.....	3
DEH 322 Dental Radiology (Seminar and Rotation)	2
	<hr/> 16

<i>Senior Year, First Semester</i>	
PMC 441 Pharmacology	5
PER 411 Periodontics	2
DEH 401 Dental Hygiene III (Lecture, Laboratory, and Clinic).....	5
DEH 411 Community Dental Health II.....	3
DEH 499 Senior Elective	3
	<hr/> 18

<i>Senior Year, Second Semester</i>	
DEH 402 Dental Hygiene IV (Clinic).....	7
DEH 412 Community Dental Health III (Extramural Program).....	4
DEH 422 Dental Hygiene Seminar I (Current Practice Issues)	2
DEH 442 Dental Hygiene Seminar III (Clinical Teaching)	2
	<hr/> 15

OFFICE OF CONTINUING EDUCATION

F. B. Wiebusch, D.D.S.

Assistant Dean for Continuing Education

For every professional person who serves the health sciences, education must be a lifetime process.

Graduation from dental school is the beginning of a continuous educational experience for the serious, conscientious student of dentistry. Regardless of how well prepared a health professional may be at the time of graduation, the adequate knowledge of yesterday is often insufficient information for today and tomorrow. With the rapid advancements made in dental concepts and techniques, the professional must constantly seek new knowledge if the health care provider is to improve the health care given patients.

Although the majority of continuing education courses are presented at the School of Dentistry, some offerings are given in other locations. The courses, which vary in length from one day to five days, are scheduled all year and consist of a variety of instructional methods—from didactic and television presentations to the individual's participation in clinical procedures.

The instructional staff for the endeavors is comprised of educators from the MCV/VCU School of Dentistry, guest lecturers from other dental schools, and members of the dental profession and related professions from the United States and other countries.

DEPARTMENTS AND PROGRAMS OF INSTRUCTION

Some courses in the School of Dentistry are taught in blocks of time which do not lend themselves to identification by lecture or laboratory hours per week. In lieu of this, the hours in those courses are identified by total hours taught.

Conjoint Courses:

DEN 501 Introduction to Prevention
 DEN 510 Scientific Inquiry
 DEN 512 Principles of Occlusion
 DEN 621 Occlusion II
 DEN 624 Applied Prevention
 DEN 625 Orientation to Clinics
 DEN 741 Management of Pain in the Head and Neck
 DEN 742 Implantology
 DEN 792 Special Studies Program
 LEM 742 Dental Jurisprudence

Program in Dental Hygiene (DEH)

Associate Professor: Dinius

Assistant Professor: Neel

Clinical Instructors: Berry; Caponigro; Liston; Mourino; Muse; Sanders

Courses in Dental Hygiene (DEH)

DEH 301 Dental Hygiene I
 DEH 302 Dental Hygiene II
 DEH 312 Community Dental Health I
 DEH 322 Dental Radiology
 DEH 401 Dental Hygiene III
 DEH 402 Dental Hygiene IV
 DEH 411 Community Dental Health II
 DEH 412 Community Dental Health III
 DEH 422 Dental Hygiene Seminar I
 DEH 442 Dental Hygiene Seminar III
 DEH 499 Senior Elective

Department Of Endodontics

Professor: England (Chairman)

Clinical Professor: Lance

Associate Professor: Holcomb

Associate Clinical Professor: Wade

Assistant Professors: Byrne; Dodds; Hartwell

Assistant Clinical Professor: Radcliffe

Clinical Instructors: Gerard; Johnson; Merian; Tullner; Wood

Courses in Endodontics (END)

END 622 Principles of Endodontics
 END 731 Endodontic Therapy
 END 749 Clinical Endodontics

Department of Oral Pathology

Professors: Salley; Wittemann

Associate Professors: Burns (Chairman); Abbey; Kaugars; Page; Svirsky

Associate Clinical Professor: Carr

Assistant Professor: Brokaw

Assistant Clinical Professors: Jones; Pines-Krystal; Sawicki

Clinical Instructors: Finley-Parker; Londrey

Courses in Oral Pathology (ORP)

ORP 301 General Pathology (Dental Hygiene)
 ORP 524 Oral Pathology (Dental Hygiene)
 ORP 621 Dental Radiology
 ORP 622 Oral Pathology
 ORP 732 Clinical Oral Pathology
 ORP 737 Radiology Rotation
 ORP 741 Oncology
 ORP 747 Diagnosis Rotation

Department of Oral and Maxillofacial Surgery

Professors: Laskin (Chairman); Campbell
Clinical Professors: Peters; Pizer
Associate Professors: Friedman; Giglio; Hardigan
Associate Clinical Professors: Alexander; Bissell; Cuttino; Nelson; Priest; Tankersley
Assistant Professors: Guttu; Strauss
Assistant Clinical Professors: Clough; Gibberman; Hartman; Hoard; Isbell; Lee; O'Neill; Pirok; Smilek

Courses in Oral Surgery (ORS)

ORS 622 Oral Surgery I
ORS 731 Medical Evaluation and Diagnosis
ORS 733 Oral Surgery II
ORS 735 Medical Emergencies
ORS 741 Special Patient Care
ORS 749 Oral Surgery III

Department of Orthodontics

Professor: Isaacson (Chairman)
Associate Professor: Rubenstein
Associate Clinical Professors: Anderson; Comer; DuVall; Gills; Kaplan
Assistant Professors: Lindaur; Revere
Assistant Clinical Professors: Ross; Wendell

Courses in Orthodontics (ORT)

ORT 623 Preclinical Ortho Lecture
ORT 733 Orthodontic Therapy
ORT 749 Clinical Orthodontics

Department of Pediatric Dentistry

Associate Professors: Farrington (Chairman); Brownstein; Mourino
Associate Clinical Professors: Avent; Bennett; Waitkus
Assistant Professors: Carpenter; Saravia; Wood
Assistant Clinical Professors: Atkins; Vitsky
Clinical Instructors: Barrett; Biery; Loving

Courses in Pediatric Dentistry (PED)

PED 622 Pediatric Dentistry II
PED 733 Pediatric Dentistry
PED 749 Clinical Pediatric Dentistry

Department of Periodontics

Professors: Butler; Schenkein; Wiebush
Clinical Professors: Maynard; Wilson
Associate Professors: Burmeister (Chairman); Abbott; Cochran; Fishman; Koertge; Sarbin
Associate Clinical Professors: Dorfman; Doswell; Green; Miller; Sweeney; Ziegler
Assistant Professors: Gunsolley; Rowland
Assistant Clinical Professors: Brooks; Griffin; Landy; Miller; Slagle
Clinical Instructors: Kenny; Masters; Moskowitz

Courses in Periodontics (PER)

PER 411 Periodontics for the Dental Hygienist
PER 621 Periodontal Anatomy and the Pathology and Etiology of Periodontal Diseases
PER 622 Diagnosis and Treatment Planning for Periodontal Therapy
PER 733 Periodontal Therapy
PER 749 Clinical Periodontics

Department of Removable Prosthodontics

Associate Professors: Unger (Chairman); Kazanoglu; McCasland; Tsao; Ward
Associate Clinical Professor: Kessler
Assistant Professors: Burns; Crabtree; Semler
Assistant Clinical Professor: Kolb
Clinical Instructors: Payne; Stepp; Stewart

Courses in Removable Prosthodontics (REP)

REP 622 Removable Partial Dentures
REP 623 Preclinical Complete Denture Prosthodontics
REP 733 Complete Denture Prosthodontics
REP 735 Clinical Removable Partial Denture Prosthodontics
REP 749.01 & .02 Clinical Complete Denture Prosthodontics
REP 749.03 & .04 Clinical Removable Partial Dentures

Department of Restorative Dentistry

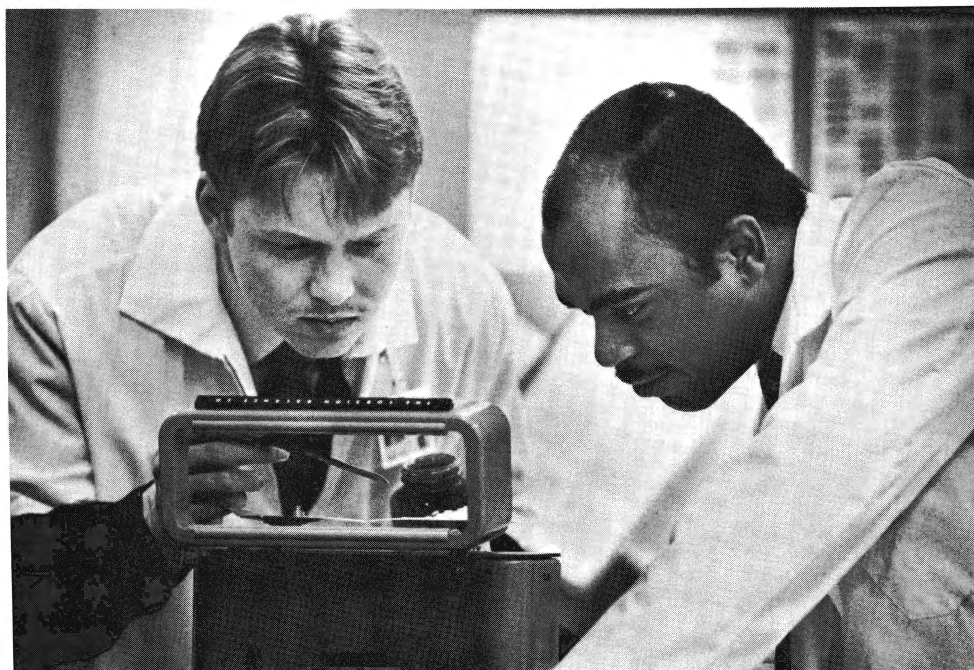
Professors: Bush; Hunt
Clinical Professors: Crockett; Perkinson
Associate Professors: Eshleman (Chairman); Barnes; Beck; Bush; Button; Douglas; Harrington; Janus; Jones; Moon; Shepard; Wittrock
Associate Clinical Professors: Adams; Barnes; Counts; Covington; Forgeng; Hubbard; Huband; Jenkins; Ortiz, E.; Rogers
Assistant Professors: Baughan; Covey; Hagan; Hall; Harris-Bussey; Sheats
Assistant Clinical Professors: Belt; Bruni; Dishman; Elstner; Griggs; Hall; Hicks; Johnson; King; Mugler; Root; Sotack; Talton; Wade
Clinical Instructors: Allegretti; Bolton; Carballeira; Fumagali; Gallaher; Harden; Harris; Heller; Kennett; Kittrell; Kitts; Larson; Link; McKinney; Molnar; Norman; Poindexter; Roelofs; Semon; Sheild; Taylor; Winkler

Courses in Restorative Dentistry (RED)

RED 302 Dental Materials (Dental Hygiene)
RED 311 Dental Anatomy (Dental Hygiene)
RED 510 Dental Materials
RED 511 Dental Anatomy
RED 512 Restorative Dentistry
RED 514 Occlusal Waxing
RED 620 Cariology

RED 745 Restorative
RED 747 Dental Auxiliary Unit Clinical
Rotation
RED 749 Clinical Restorative Dentistry

RED 745 Restorative Clinical Rotation
RED 747 Dental Auxiliary Unit
RED 749 Clinical Restorative Dentistry



PART IV — School of Pharmacy

JOHN S. RUGGIERO, Ph.D.

Dean

C. EUGENE WHITE, J.D.

Associate Dean of Students

GRAHAM C. WINDRIDGE, Ph.D.

Associate Dean

THOMAS P. REINDERS, Pharm.D.

Assistant Dean for Clinical Affiliations

WERNER LOWENTHAL, Ph.D.

Director of Continuing Education

The School of Pharmacy of the Medical College of Virginia, Virginia Commonwealth University, was officially established in 1898; the University College of Medicine had a school of pharmacy when it opened in 1893. A two-year curriculum gave way to a three-year program in 1925, and in 1932 the school required four years of college work for which a B. S. degree was awarded. The curriculum for the Bachelor of Science in pharmacy degree was extended to five years in 1960. The School of Pharmacy enrolls students in a three-year professional curriculum following completion of two years of pre-professional studies taken elsewhere.

In 1975, the School of Pharmacy received authorization to offer advanced professional education leading to the Doctor of Pharmacy degree.

The authority to award graduate degrees in the pharmaceutical sciences was granted by the Graduate Council in 1952. Departments in the school direct work leading to the M.S. and Ph.D. degrees in medicinal chemistry, pharmaceuticals, and pharmacy administration.

Since 1971, all pharmacy students have partic-

ipated in a clerkship program. During their last semester, students in the baccalaureate program serve a four-week clerkship within the Medical College of Virginia Hospitals, working directly with patients and their drug therapy programs; four weeks each in a community pharmacy and a hospital pharmacy under the training and guidance of selected preceptors; and four weeks in elective programs. Students in the Doctor of Pharmacy program participate in more extensive clerkships and in research projects to investigate methods for improving pharmaceutical services.

PHILOSOPHY

In developing the curriculum of the School of Pharmacy, the faculty recognizes that an educated person should be prepared to assume a responsible and rewarding role in society. Accordingly, the educational program is designed to provide a sound, scientific, and professional background for both those who will enter the practice of pharmacy directly and those who wish to continue graduate education in the pharmaceutical sciences. It includes as much of the arts and humanities as possible in order to provide the student with a broad educational base which will permit participation in community life, not only as a professional, but also as an informed, concerned citizen. Such courses enrich the student's life by stimulating a greater appreciation of cultural values and sensitivity to the problems of our society.

MISSION AND GOALS

The School of Pharmacy offers the only pharmacy programs in Virginia and has done so since 1898. As such it is responsible for educating individuals who will develop and provide quality pharmaceutical services and programs throughout the Commonwealth as well as individuals who will become involved in the pharmacy and pharmaceutical sciences arenas at the national level.

The mission of the School is to provide organized pharmacy curricula involving sound scientific and professional education for those individuals who will enter the practice of pharmacy directly and special courses and programs for those who seek additional education in pharmacy; and to provide graduate education in the pharmaceutical sciences. The curricula provide a broad educational base, including courses in the arts and humanities, to prepare the graduate to participate in community life as a professional and as an informed and concerned citizen.

The faculty and administration of the School of Pharmacy strive to provide an educational environment which encourages excellence in scholarship; assures excellence in teaching; promotes research for the acquisition of new knowledge in the pharmaceutical and related sciences and in the practice of pharmacy; promotes commitment to service to the University, the profession and community; presents through professional example traditional and innovative roles for pharmacists in health care services; emphasizes an awareness of professional demeanor and ethics; and fosters the concept and importance of lifelong learning. The School also assumes an active role in demonstrating traditional and developing innovative practice models.

The goals of the School of Pharmacy are to:

- I. Provide organized pharmacy curricula for individuals who will enter the practice.
- II. Provide special courses and programs for those who seek additional education in pharmacy.
- III. Provide graduate education in the pharmaceutical sciences.
- IV. Prepare and encourage graduates to function as professionals and concerned citizens. Develop an awareness in students and faculty for professional demeanor and ethics.
- V. Encourage excellence in scholarship.
- VI. Develop and assure excellence in

teaching.

- VII. Promote research and scholarly activity in the pharmaceutical sciences and related disciplines.
- VIII. Encourage the performance of service responsibilities to the university, school, department, profession and broader community.
- IX. Foster the concept and importance of lifelong learning.
- X. Assume a proactive role in the development of pharmacy practice.
- XI. Promote faculty development.
- XII. Recruit highly qualified students from all segments of society.

CAREER OPPORTUNITIES

Graduation from the School of Pharmacy affords the opportunity to pursue one of several career paths. The most familiar career is that of community pharmacist. In this setting the pharmacist may be self-employed or may be an employee of an organization which may range in size from a single pharmacy to a national chain.

In some cases, pharmacies specialize only in prescription and other health-related needs. About eight out of every ten pharmacists practicing in America serve in some capacity in community pharmacy.

One of the most rapidly growing aspects of pharmaceutical practice is institutional or hospital pharmacy. All major hospitals have one or more full-time pharmacists. With increasing emphasis on institutional medicine, the demands for pharmacists in this area of practice have grown tremendously in the past few years.

The pharmaceutical industry employs pharmacists in several areas including manufacturing, quality control, research, and sales. Pharmacists are also engaged as medical service representatives who call on physicians. Opportunities are also available in various government services, including the Public Health Service and the Veterans Administration, as well as in government-operated laboratories.

In most cases, those who aspire to engage in independent research or to teach seek graduate degrees in the pharmaceutical sciences or in specialty fields related to pharmacy.

FACILITIES

The School of Pharmacy is located in the Robert Blackwell Smith, Jr., Building located at

Twelfth and Clay Streets. This building, which is named in honor of a distinguished former dean of pharmacy, president of the Medical College of Virginia, and provost of the MCV Campus of Virginia Commonwealth University, was completed in 1984 with the help of contributions from many alumni and friends of the School of Pharmacy.

Classes for students in pharmacy are also conducted in Sanger Hall, located between Eleventh and Twelfth Streets on East Marshall Street. This building houses several departments of the School of Basic Health Sciences which provide instruction for pharmacy students. Students receive clinical experience in the MCV Hospitals and clinics. Other facilities available for teaching include area hospitals and pharmacies. The major library holdings are in the Tompkins-McCaw Library at Twelfth and Clay Streets.

ACCREDITATION

The Bachelor of Science and Doctor of Pharmacy programs are accredited by the American Council on Pharmaceutical Education. The school is a member of the American Association of Colleges of Pharmacy.

PROGRAMS

Professional. The Bachelor of Science in pharmacy degree (B.S.) is conferred upon candidates who have satisfactorily completed the three professional years of the program, have complied with all University regulations concerning degrees, and have been approved by the faculty of the School of Pharmacy.

The Doctor of Pharmacy degree (Pharm.D.) is conferred upon candidates who have satisfactorily completed the academic requirements of the program, have complied with all University regulations concerning degrees, and have been approved by the faculty of the School of Pharmacy.

Graduate. Departments in the school offer programs of graduate study leading to the degrees of Master of Science (M.S.) and Doctor of Philosophy (Ph.D.). Students may specialize in biopharmaceutics, medicinal chemistry, biopharmaceutical analysis, or pharmacy administration.

Interested students with graduate study potential should consult the appropriate department chairman. Information on procedures and policies for graduate studies can be found in the *VCU Graduate Bulletin*.

LICENSING AND RECIPROCITY

The Virginia Board of Pharmacy holds qualifying examinations for licensure twice yearly. Applicants for the examination must present evidence that their first professional degree was granted by a school of pharmacy recognized by the board. This school is among those recognized. Applicants must also present evidence of completion of 1,000 hours of practical experience. This requirement is met in full by the school's programs.

Those students who intend to be licensed in Virginia should contact the Virginia Board of Pharmacy, 517 West Grace Street, Richmond, VA 23261.

Virginia has reciprocal licensing agreements with all states except California and Florida.

ADMISSION REQUIREMENTS—B.S. PROGRAM

Applicants for admission to the School of Pharmacy must attend an accredited college for at least two academic years (six quarters or four semesters) prior to admission.

Students planning to seek a degree in pharmacy upon high school graduation should plan their high school program to meet the requirements for admission in the college where they will take the prerequisite work for admission to pharmacy. High school programs rich in mathematics and the sciences provide excellent preparation for the study of pharmacy.

The minimal admission requirements are listed below. (Meeting these requirements does not, however, guarantee acceptance into the VCU School of Pharmacy.)

A. A statement affirming the applicant's good moral character signed by one or more pharmacists, physicians, or former teachers may be requested by the Admissions Committee.

B. An official high school transcript and official transcripts from all colleges attended. Applications are considered by the Admissions Committee only after transcripts on file show completion of no less than two semesters or three quarters of college work. When offered, an acceptance is contingent upon satisfactory completion of specific work that may be in progress.

C. Academic Prerequisites. Applicants must offer the required credits in the following subject areas for a total of at least 65 semester hours (97.5 quarter hours).

	Semester Hours	Quarter Hours
Biology (lecture and laboratory) ...	8	12
General Chemistry (lecture and laboratory)	8	12
Organic Chemistry (lecture and laboratory)	8	12
Physics (lecture and laboratory)....	8	12
English	6	9
Mathematics (at least 3 semester hours or 4.5 quarter hours must be calculus)	6	9
Economics	3	4.5
Electives	18	27
TOTAL	65	97.5

Credits earned through Advanced Placement (AP) Tests of the College Board are not acceptable in meeting the total sixty-five (65) semester hours requirement. Such AP credits may excuse a student from taking a specific nonscience course such as English, economics, or mathematics, but these credits must be earned in additional electives.

All elective credits must be in liberal arts or behavioral sciences (natural sciences, physical education, business, or studio course credits are not accepted).

In unusual cases, students may be admitted subject to completion of course credit prior to graduation.

D. Applicants must have earned a creditable average ("C" or better) overall, and in the courses specified, to meet minimum academic requirements for admission.

E. Applicants for admission must submit a completed application form; this form requires that the names of four individuals be given, including at least two teachers (preferably in the sciences) qualified to assess the applicant's ability to complete the curriculum in pharmacy.

F. The dean and the committee on admissions may require a personal interview with the applicant.

G. Applicants are urged to take the Pharmacy College Admission Test before admission.

H. Students are admitted only at the start of the academic year. An applicant must complete one full year of the academic prerequisites before an application can be reviewed. The Admissions Committee begins reviewing applicants during October of the year preceding admission. It is to the applicant's advantage to apply during the summer of the year before expected enrollment in the School of Pharmacy. Applicants are accepted pending satisfactory completion of all prerequisite courses.

Further information and application materials may be obtained by writing to the Chairman, Admissions Committee, School of Pharmacy, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA 23298-0581.

CURRICULUM — B.S. PROGRAM

FIRST PROFESSIONAL YEAR (THIRD COLLEGE YEAR)

	Semester Hours
<i>First Semester</i>	
PHC 302 Medicinal Chemistry I	3
PHA 301 Principles of Pharmacy I	4.5
PHA 311 Pharmacy Law and Ethics	1
PHA 331 Introduction to Pharmacy Practice	2
ANA 401 Human Anatomy	4.5
	15

<i>Second Semester</i>	
PHC 410 Principles of Pharmaceutical Analysis	3
PHA 302 Principles of Pharmacy II	5
BIC 402 Biochemistry	5
PIO 482 Physiology	4
	17

SECOND PROFESSIONAL YEAR (FOURTH COLLEGE YEAR)

<i>First Semester</i>	
PHA 415 Communication Skills	1
PHA 401 Principles of Pharmacy III	3.5
PHA 403 Pharmacy Practice Management	3
PHC 403 Medicinal Chemistry II	4
PMC 403 Pharmacology	4
MIC 401 Microbiology	4.5
	20

<i>Second Semester</i>	
PHA 416 Communication Skills	1
PHA 406 Applied Pharmacy Practice Management	2
PHA 402 Principles of Pharmacy IV	3.5
PHA 411 Clinical Pharmacy & Therapeutics	4
PHC 404 Medicinal Chemistry III	3
PMC 404 Pharmacology	4
	17.5

THIRD PROFESSIONAL YEAR (FIFTH COLLEGE YEAR)

<i>First Semester</i>	
PHA 442 Drug Literature Evaluation	2.5
PHA 533 Nonprescription Medication	2.5
PHA 511 Clinical Pharmacy & Therapeutics	5
PHA 510 Communication Skills	1
PHA 505 Pharmacy Law	3
ELECTIVE	3
	17

<i>Second Semester</i>	
PHA 512 Professional Practice Clerkships	17

In some instances, students in the third professional year may be obliged to travel and reside some distance from Richmond as part of the program. No refund of payments for tuition, fees, or other purposes may be expected by the students in this event if credit is granted for the

time spent in this phase of the program. No stipends may be earned by the students in connection with any professional practice program for which the school grants credit. The clerkship program is 17 weeks long and covers the second semester including the week of the spring semester break.

ADMISSION REQUIREMENTS — DOCTOR OF PHARMACY PROGRAM

A. Applicants must be graduates of, or enrolled in the final year of a B.S. in pharmacy program which is accredited by the American Council on Pharmaceutical Education. Students who have demonstrated superior academic achievement during the first two years of the B.S. in Pharmacy program in this school may be eligible to transfer to the Pharm.D. program at the end of their second professional year.

B. Evaluations of the applicant's moral character, personal qualities, and academic and intellectual potential must be provided by professors in a school of pharmacy.

C. Verbal, quantitative, and analytical scores from a recent Graduate Record Examination must be submitted. (In exceptional circumstances, requests to waive this requirement will be considered.)

D. The Committee on Admissions may require a personal interview with the applicant.

Further information and application materials may be obtained by writing to the Chairman, Pharm.D. Admissions Committee, School of Pharmacy, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA 23298-0581.

PHARM. D. CURRICULUM

The Doctor of Pharmacy curriculum has the flexibility to adapt to the needs of students from varied backgrounds with differing objectives. Emphasis may be placed on a clinical or management track. In general, a student who has met the requirements of the baccalaureate program will, during four semesters and a summer, complete a minimum of 75 semester hours, including the following required courses, clinical experiences, and research.

BIS 543 Biostatistics	3
PHA 650 Drug Literature Evaluation	3
PHA 690 Seminar	2
PHA 622 Clinical Pharmacokinetics	3
PHA 631 Advanced Pharmacy Practice Management	3

PHA 635 Advanced Pharmacotherapeutics I	6
PHA 636 Advanced Pharmacotherapeutics II	6
PHA 693-696 Advanced Practice	33
PHA 697 Research	7

ACADEMIC REGULATIONS

Matriculation in the School of Pharmacy implies a willingness on the part of students to comply with university rules and regulations and to conduct themselves in a manner befitting members of the profession the students seek to enter. The program of study and regulations regarding courses of study, student conduct, etc., are subject to modification without notice. All rules and regulations set forth in this bulletin, as well as other statements issued by administrative officers of the University, apply until further notice.

Probation. Students may be placed on probation by either the Committee on Admissions or the Committee on Promotions. Probation is a status indicating that the student's scholarship is deficient and is expected to be improved to a level considered to be satisfactory by the faculty. Students who fail to meet probationary stipulations may expect to have their normal progress through school interrupted. They may be required to attend summer school, to repeat a year, or to withdraw. Students on probation are not eligible to be nominated for offices in the student government nor to represent the school in athletics or other extracurricular activities. Students on probation are expected to stop, or drastically curtail, any outside employment. Each student who is placed on probation receives a letter in which the details of that individual's probation are described.

Outside Work. Employed students ranking in the lower half of their classes may receive a notice from the faculty requesting that outside work be curtailed or eliminated. In general, the faculty believes that students should give first priority to their school work. Students able to maintain academic standing are not restricted with respect to outside employment.

Honor Code. All students are governed by the honor code and regulations of the student body organization. A detailed description of the Honor Council's rules of procedure is available upon request.

FACULTY ADVISING PROGRAM

Each student in the School of Pharmacy is assigned a faculty advisor who can assist the

student with academic and personal problems. Students usually remain with the same advisor throughout their attendance in the School of Pharmacy.

There is a faculty advisor to the Interfraternity Council as well as an advisor for each of the professional pharmacy fraternities.

Each of the student chapters of professional pharmacy organizations on campus operates with a faculty advisor.

ATTENDANCE REGULATIONS

The following regulations apply specifically to students enrolled in the Bachelor of Science in pharmacy and the Doctor of Pharmacy programs in all of their required and elective courses offered by departments in the School of Pharmacy and to required courses offered by the School of Basic Health Sciences. In courses in which these regulations apply, other students enrolled with pharmacy students also are subject to the regulations.

1. The faculty considers attendance at lectures, laboratories, and other functions a requisite to the successful acquisition of the knowledge and skills required of the professional pharmacist. Hence, the faculty cannot condone absence or tardiness without good reason from any regularly scheduled educational experience.
 2. The faculty recognizes the value of student participation in the activities of professional pharmacy organizations. Students who are in good academic standing may, with prior approval, receive an excused absence from class to attend such functions. Eligibility criteria are described in a separate policy document.
 3. Absence from class, under certain circumstances, may be excused. Requests for excuses for unavoidable absences must be submitted to the dean's office on the proper form within 24 hours of returning to school after the period of absence. The student must explain on the form the exact reason for the absence. Further explanation, if necessary, may be given in person. It is a violation of the Honor Code to make false or misleading statements on the absence form. Whether the absence is excused or not, the student is responsible for all work missed.
- A guiding principle in determining whether an absence should be excused is that the absence is caused by circumstances beyond the student's control. The following are considered valid excuses for being absent from a class:
- a. **Illness or a medical or dental emergency.** The school normally accepts the student's judgment that the condition was serious enough to justify the absence from class; however, the school reserves the right to require a medical opinion.
 - b. **Death of a relative or friend.** Students will be excused from class to attend funerals. Absence beyond the day of the funeral will be excused for periods of mourning required by a student's religious or cultural tradition or when a student is too grief-stricken to return immediately to class.
 - c. **Mandatory court appearances.**
 - d. **Mandatory religious observances.** Students who anticipate absences from class because of religious obligations should submit a list of their anticipated absences at the beginning of each semester in addition to submitting the absence forms following each absence.
 - e. **Failure of private, public, or University transportation.**
4. Absences not reported within 24 hours are considered to be unexcused. It is not the instructor's responsibility to determine whether the absence from laboratories, tests, or lectures should be excused; absences may be excused by a dean only. A grade of zero will be given when absences from testing events or graded laboratory exercises are not excused.
 5. Unexcused absences exceeding one per semester hour will allow the course coordinator to reduce the earned grade by one level. Further grade reductions at the same rate may be made for succeeding blocks of unexcused absences.
- At the start of each course, the course coordinators will relate to the students their policies regarding this provision, as well as any attendance policies which may be unique to that course.
6. Students are expected to make every effort to keep up with their schoolwork during an absence and thus be prepared to take tests upon their return. If, in the opinion of the administration, the nature of a stu-

dent's absence made it impossible for that student to prepare for a test, the student will be permitted to delay taking the test.

7. The nature and date of any make-up activity will be determined by the instructor.

Faculty should not give make-up examinations before confirming that a student's absence has been excused unless no one will be available to grant an excuse for more than two days beyond a student's return to school. If a make-up test is given before an absence has been ruled upon, the instructor must obtain from the student, **in writing**, an agreement that the grade earned on the examination will be reduced to zero if an excuse for the absence is not subsequently issued.

8. Tardiness is a form of absence which may also be excused using the criteria mentioned above. Students arriving late for a testing event may be given the test without an excused absence but will not be allowed extra time beyond the scheduled end of the test. Once any student has completed the test and left the room, late-arriving students will not be permitted to take the test unless the absence is excused.

PROMOTION

Attending pharmacy school is not a right acquired simply by conforming with the entrance requirements and paying tuition and fees. Tuition and fees do not defray the total cost of a pharmaceutical education since part of the cost comes from the state and other sources. It is, therefore, a privilege granted to certain qualified persons so that society's need for pharmacists may be fulfilled. The persons to whom this privilege should be granted are, naturally, those who will make the best pharmacists. It is for this reason that the dean and the Committee on Promotions, composed of the students' instructors during the year, require that marginal or failing performance be improved or that the student withdraw from school. The most careful consideration is given during both the admissions process and the promotions process not only to the student's grades but also to his or her probity, industry, scholastic ability, and inclinations.

The following principles outline the prominent features of the promotions process:

1. Students who have passed the work of an academic year in a satisfactory manner usually

are advanced to the next higher class provided there are no contravening reasons that make this undesirable.

2. The Committee on Promotions thoroughly reviews the academic record of each student who fails to pass a course or who does not maintain a grade-point average of 2.0 or better. Following this review, the committee may, depending upon individual circumstances, promote a student on a probationary basis, require the student to repeat all or a part of previous work, or terminate the student's enrollment.

3. A student with course deficiencies will not be allowed to enter the final year of the program.

4. Students who fail two or more subjects ordinarily are continued in enrollment only under exceptional circumstances.

5. Students who fail to meet conditions of probation may be asked to withdraw or repeat a year's work.

The above guidelines are not absolute rules, but they indicate what action may be taken in a particular case. The dean and the Committee on Promotions remain entirely free to pass upon each case according to its merits.

Criteria for promotion in the Pharm.D. program are available from the director of the Pharm.D. program.

WITHDRAWAL

Students finding it necessary to withdraw from the School of Pharmacy must comply with the provisions for withdrawal in Part I of this bulletin.

The dean of the School of Pharmacy will not approve a request for withdrawal until the student has submitted a letter of resignation.

Students withdrawing without approval and failing to check out laboratory lockers will be assessed a \$5 checkout charge for each locker in addition to any charges resulting from the need to replenish the contents of the lockers.

READMISSION

Students seeking readmission to the School of Pharmacy will be evaluated on their total academic record. Applicants for readmission to the first professional year will not be given priority over new applicants but must compete with them on an equal basis. Readmission in advanced standing will be considered on a space-available basis.

GRADUATION

Students are recommended and approved for the Bachelor of Science in pharmacy or Doctor of Pharmacy degrees by the faculty of the School of Pharmacy.

Candidates for the **B.S. in pharmacy degree** must meet the following requirements:

1. Be of good moral character.
2. Complete satisfactorily all the required work in a timely fashion, which will not normally exceed five years from the date of initial enrollment.
3. Pay all fees.
4. Complete the last year's work for the degree in residence in this school.
5. Be present at the commencement exercises unless excused by the dean in writing.

Candidates for the **Pharm.D. degree** must meet the following requirements:

1. Be of good moral character.
2. Successfully complete a minimum of 75 semester hours in advisor-approved courses.
3. Maintain an overall grade-point average of at least 2.5 and a grade-point average of 3.0 in the required (core) curriculum.
4. Complete, to the satisfaction of the Research Committee and faculty, all phases of a research project including a written report approved by the student's research committee.
5. Complete satisfactorily the minimum number of required clerkship rotations and demonstrate the attainment of minimum competencies.
6. Fulfill all requirements of the University, including payment of all fees, and be present at official commencement exercises unless specifically excused by the dean in response to a written request.
7. Complete all requirements for graduation within four calendar years from the date of admission to the program.

HONORS AND AWARDS

Rho Chi. This national honorary pharmaceutical society established Lambda Chapter at MCV in 1929. Charters for chapters of this organization are granted only to groups in colleges that are members in good standing of the American Association of Colleges of Pharmacy. Election to membership in the society is based on high attainment in scholarship, character, personality, and leadership. Students become eligible for consideration during the second professional year of the pharmacy program.

Lambda Chapter annually awards certificates in recognition of outstanding scholarship to students who have completed the pre-pharmacy and first professional year pharmacy curriculum. Also, Lambda Chapter selects one member of the senior class who is recognized for excellence in scholarship, leadership, personality, and character. The name is inscribed on a plaque displayed in the School of Pharmacy.

A. D. Williams Awards. One outstanding student in each of the three professional years in pharmacy receives an A. D. Williams Scholastic Achievement Award. This award is given in recognition of the highest academic achievement in the class. The award consists of an honorarium and an engraved certificate of acknowledgment.

Virginia Pharmaceutical Association Scholarship Awards. The Virginia Pharmaceutical Association, wishing to encourage excellence in scholarship among students of pharmacy, established three scholarship awards for graduating seniors. The first, known as the Wortley F. Rudd Award, is presented to the student with the highest overall average. The second, known as the William G. Crockett Award, is presented to the senior student who earns the highest average in pharmacy courses. The third, known as the Frank P. Pitts Award, is presented to the senior student who earns the highest average in chemistry courses.

Virginia Pharmaceutical Association Student Service Award. An award, consisting of a plaque and an honorarium, is presented to the graduating senior who has been of greatest service to the profession.

The Merck Award. An award, consisting of the current editions of the *Merck Index* and *The Merck Manual*, is presented to a rising senior.

The Upjohn Award. An award, consisting of a plaque and an honorarium, is given to the graduating senior who has been selected for outstanding contributions in public service while enrolled as a student in the School of Pharmacy.

Clinical Pharmacy Practice Award. This award, consisting of an honorarium and a plaque provided by Sandoz Pharmaceuticals, is given to the graduating Pharm.D. student who attained the highest grades in clerkships.

The Edward E. Willey Pharmacy Scholarship Award for Outstanding Scholarship and Leadership. This award, which memorializes a distinguished alumnus and dedicated public servant, is presented annually to a rising senior student who is determined by a committee of

faculty to be outstanding in character, as judged by faculty and classmates; leadership ability, as demonstrated by participation in and leadership of student organizations; and academic performance, as demonstrated by the attainment of a 3.75 grade-point average during the first two years in pharmacy school. The award consists of payment of tuition, fees, and a stipend.

Linda Nixon Harvey Memorial Scholarship.

This endowed award is presented annually to a rising fifth-year student who has maintained high academic standards in college while exhibiting leadership, professional integrity, and outstanding personal qualities.

Jacobs Memorial Scholarship Fund. This endowed award is available annually to pharmacy students in financial need as recommended by the dean of the School of Pharmacy.

David D. Marshall Memorial Scholarship.

This endowed award is presented annually to a married senior student who ranks academically in the top half of the class and who has a demonstrated financial need.

M. Bruce Rose Scholarship. This endowed award is presented annually to a student from the Virginia Pharmaceutical Association's Third District.

Glenn B. Updike, Sr. Scholarship Fund. This endowed fund is available, upon recommendation of the dean of the School of Pharmacy, to students who have financial need and scholastic ability. Special preference shall be given to applicants who are residents of Danville, Virginia.

ORGANIZATIONS

Student American and Virginia Pharmaceutical Association. Students in the School of Pharmacy have an opportunity to become members of this national and state-affiliated organization. The group meets regularly presenting programs of interest to the student body.

Student Chapter Virginia Society of Hospital Pharmacists. Pharmacy students who are interested in the practice of hospital pharmacy may become members.

Professional Fraternities. Chapters of Phi Delta Chi, Kappa Psi, and Kappa Epsilon are active within the student body. These fraternities extend invitations, according to the rules of the Interfraternity Council, to pharmacy students to become members. Eligibility for consideration is based upon academic achievement as determined by the Interfraternity Council and the dean's office.

FINANCIAL AID

See Financial Assistance section in Part I.

COURSES OF INSTRUCTION

Department of Medicinal Chemistry (PHC)

Professors: Abraham (Chairman); Andrako; Glennon; Kier; May; Richard; Stubbins

Associate Professors: Boots; Soine, W.; Westkaemper; Windridge

Affiliate Associate Professor: Van't Riet

Affiliate Assistant Professors: Ally; Soine, P.; Uwaydah; Young

Instructor: Harvie

302 Medicinal Chemistry I. Semester course; 3 lecture hours. 3 credits. Prerequisite: one year of organic chemistry. This course integrates the chemical and physical properties of organic molecules with biological effects. Particular emphasis is placed on heterocyclic chemistry, mechanisms of enzymatic reactions, and stereochemistry as they relate to drug action and toxicity. Certain physico-chemical phenomena are described which pertain to biological events.

403 Medicinal Chemistry II. Semester course; 4 lecture hours. 4 credits. Prerequisite: PHC 302. A study of synthetic and natural organic compounds of medicinal and pharmaceutical interest with emphasis being placed on physical and chemical properties and on the relationships between chemical structure and pharmacological activity.

404 Medicinal Chemistry III. Semester course; 3 lecture hours. 3 credits. Prerequisite: PHC 403. A continuation of PHC 403.

410 Principles of Pharmaceutical Analysis. Semester course; 2 lecture and 2 laboratory hours. 3 credits. A study of the underlying principles and practical limitations of drug analysis procedures with emphasis on those techniques which are most applicable to the quantitation of drugs in biological fluids. The laboratory work involves familiarization experiments and actual assays employing a variety of chromatographic and photometric procedures. In addition, the students will learn to perform colorimetric and chromatographic identification tests for abused drugs.

506 Advanced Medicinal Chemistry I. Semester course; 3 lecture hours. 3 credits. A study of pharmacodynamics, theories relating to drug action, and the general principles of drug design.

526 Research Techniques in Medicinal Chemistry. Semester course; 0-2 lecture and 2-8 laboratory hours. 1-4 credits. The theory and application of classical, instrumental, and computer techniques used in pharmaceutical research are presented.

531 Medicinal Chemistry for Nurse Anesthetists I. Semester course; 4 lecture hours. 4 credits. A review of the principles of organic chemistry and bio-organic chemistry with emphasis on the concepts necessary for an understanding of PHC 532.

532 Medicinal Chemistry for Nurse Anesthetists II. Semester course; 3 lecture hours. 3 credits. Prerequisite: PHC 531 or equivalent. A series of lectures covering the structure-activity relationships, metabolism, and mechanism of action of selected agents.

607 Advanced Medicinal Chemistry II. Semester course; 3 lecture hours. 3 credits. A study of the structure-activity relationships and mode of action of selected groups of drugs.

622 Stereochemistry. Semester course; 2 lecture hours. 2 credits. A study of the number and kinds of stereoisomers of organic compounds and the differences in chemical and physical properties between stereoisomers.

630 Computer-Aided Drug Design and Molecular Modeling. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: PHC 506, PHC 607, or the permission of the instructor. A study of the theoretical methods of drug structure-activity analysis, including molecular orbital theory, topological indexes, and physical property correlations. The course will include molecular modeling concepts with the current software used for drug design and small molecule-large molecule interactions. Computational chemistry problems will be emphasized also.

632 Heterocyclic Chemistry. Semester course; 3 lecture hours. 3 credits. A series of lectures covering a number of the more important heterocyclic systems.

690 Departmental Research Seminar. Semester course; 1 lecture hour. 1 credit. Current problems and developments in pharmaceutical and medicinal chemistry are discussed by visiting lecturers, staff, and students.

691 Special Topics in Medicinal Chemistry. Semester course; 1-4 lecture hours. 1-4 credits. Lectures, tutorial studies, and/or library assignments in selected areas of advanced study not available in other courses or as a part of the research training.

697 Directed Research in Medicinal Chemistry. Semester course; 1-15 credits. Research leading to the M.S. or Ph.D. degree.

Department of Pharmacy and Pharmaceutics (PHA)

Professors: Barr (Chairman); Garnett; Hirsch; Lowenthal; McKenney; Polk; Ruggiero

Associate Professors: Ballentine; Byron; Carroll; Comstock; Gonzalez; Hayes; Karnes; Lehman; Miederhoff; Poynor; Reinders; Small; Smith; White

Assistant Professors: Brasfield; Hansen; Hilliard; Israel; Kirkwood; Kolb; Leitinger; Mullins; Musulin; Pesko; Rock; Sypniewski; Venitz

Assistant Clinical Professors: Adams; Akers; Allen; Bahlman; Barlow; Blanchard; Blue; Bradley; Briggs; Brink; Chatelain; Cole; Davis; Dillon; Di Stefano; Dugger; Edloe; Emswiler; Flint; Hasty; Herbert; Israel; Jeter; Johnston; Kennedy; Konnor; Martin; McFadden; Meltzer; Morgan; Munden; Munroe; Nescary; Ostrosky; Pedigo; Pigg; Poremba; Reed; Rhodes; Riffe; Rogers; Rollings; Tarasidis; Thomas; Wall; Weber; Welk; White; Wyant

Research Assistant Professor: Healy

Instructors: Boggs; Bullock; Exum; Kirkpatrick; Loftis; Shasky; Small

Clinical Instructors: Abernathy; Agner; Allen, C.; Allen, R.; Anderson; Atkins; Barbaccia; Barbatti; Bayer; Berryman; Blanton; Blevins; Bowles; Buddie; Bullock; Burns; Carlson; Carney; Carrig; Carson, J.; Carson, R.; Chaney; Clapham; Coukos; Clark; Cundiff; Davis; Fulks; Gallahan; Garabedian; Garland; Gutshall; Guy;

Hancock, D.; Hancock, R.; Hawley; Hayter; Healy; Hernandez; Hollis; Holt; Holzbach; Hughes, J.; Hughes, T.; Humphries; Jassen; Johnson, A.; Johnson, J.; Jones, H.; Jones, L.; Jones, S.; Jones, T.; Jones, W.; Kahn; Kellum; Kiser; Kittenger; Kolinski; Krick; Latts; Lessing; Linas; Long; Louka; Martell; McCollum; McCoy; Milkovich; Miller; Mink; Mitchell; Muha; Muniz; Orr; Parrish; Patterson; Pelham; Petrizzi; Price; Pickard; Plogsted; Prieston; Rayfield; Reinhardt; Richards; Rodgers; Rodriguez; Rogers; Rosner; Rotz; Schalow; Schotz, D.; Schotz, S.; Scott; Sharp; Sisca; Sim; Smith; C.; Smith, H.; Smith, S.; Stewart; Stoneburner; Symes; Taylor, P.; Taylor, T.; Thompson, D.; Thompson, J.; Tiffany; Varalli; Walker; Wiatt; Yunker

301 Principles of Pharmacy I. Semester course; 4 lecture and 2 laboratory hours. 4.5 credits. A study of the chemical, physicochemical, and biopharmaceutical principles fundamental to the development and use of medication dosage forms. Pharmaceutical calculations and technology required to compound and dispense dosage forms for prescription orders are presented. Includes discussion of metrology, theory of solutions, kinetics, biopharmaceutics, colloidal systems, and suspensions.

302 Principles of Pharmacy II. Semester course; 4 lecture and 2 laboratory hours. 5 credits. A continuation of PHA 301.

311 Pharmacy Law and Ethics. Semester course; 1 lecture hour. 1 credit. A review of specific pharmacy laws necessary to function properly as a student extern, and a discussion of ethical issues which impact pharmacy practice.

331 Introduction to Pharmacy Practice. Semester course; 2 lecture hours. 2 credits. This course acquaints students with roles and functions of pharmacists within traditional and innovative health-care systems. Students will observe settings in which health care is provided. Requirements for different types of pharmacy practice will be discussed.

381 Pharmacotherapeutics in Nursing. Semester course; 3 lecture hours. 3 credits. An introductory course in pharmacotherapeutics for nursing students emphasizing the safe and appropriate use of drugs in the prevention and treatment of disease. Didactic presentations will focus on the principles and concepts of drug action and therapeutic indications for selected drugs and drug classes. The nursing process in relation to pharmacotherapeutics will be included, when appropriate.

401 Principles of Pharmacy III. Semester course; 2 lecture and 3 laboratory hours. 3.5 credits. Prerequisite: PHA 302. The course is a continuation of PHA 301 and 302. The physicochemical, pharmaceutical, and biopharmaceutical principles underlying the compounding and use of aerosols, emulsions, topical products, suppositories, powders, granules, capsules, and tablets are presented. Factors affecting the bioavailability of these dosage forms are discussed. In the laboratory the students learn compounding and dispensing skills related to oral, topical, and I.V. dosage forms, the use of the telephone in receiving prescription orders, and the utilization of a patient medication profile system.

402 Principles of Pharmacy IV. Semester course; 2.5 lecture and 3 laboratory hours. 3.5 credits. Prerequisite: PHA 401. A continuation of PHA 401.

403 Principles of Pharmacy Practice Management. Semester course; 3 lecture hours. 3 credits. This course describes social, behavioral, and economic theories pertinent to the management of pharmacy practices in community, hospital, and other settings.

406 Applied Pharmacy Practice Management. Semester course; 2 lecture hours. 2 credits. Prerequisite: PHA 403. Application of theoretical concepts to the practical management of pharmaceutical services will be discussed.

411 Clinical Pharmacy and Therapeutics. Semester course; 4 credits. An integrated approach to the study of human disease and pharmacotherapeutics. The etiology, pathogenesis, clinical course, clinical manifestations, prevention, and treatment of the more common or significant disease states are presented. Clinical pharmacology, applied clinical pharmacokinetics, and techniques for monitoring and optimizing pharmacotherapy using subjective and objective data are emphasized. Lectures, clinical conferences, and assigned reading from the medical literature are used.

415 Principles of Interpersonal Communication in Pharmacy. Semester course; 1 credit. A study of the theory and techniques of communication and counseling related to the delivery of health-care services.

416 Pharmacy Communication Skills. Semester course; 1 credit. Supervised practice in developing basic communication skills for pharmacy practice.

420 Drug Education. Semester course; 3 lecture hours. 3 credits. A course in drug use education for health educators, emphasizing the safe and effective use of prescription and nonprescription drugs in the overall treatment of illness. Didactic presentations will focus on principles and concepts of drug action and therapeutic indications for selected drugs and drug classes. Drug abuse, drug dependence, rehabilitation methods, and prevention programs will also be discussed. The student will be able to apply educational methodologies to this content area.

442 Drug Literature Evaluation. Semester course; 2.5 lecture hours. 2.5 credits. The student is taught to retrieve and to evaluate the validity of published studies and to apply principles of biostatistics in the design and evaluation of clinical drug research studies.

501 Community Pharmacy Administration. Semester course; 4 lecture hours. 4 credits. A discussion of the managerial problems involved in the ownership and/or management of a noninstitutional pharmacy. Topics covered include opening or purchasing a pharmacy, personnel management, inventory control, pricing, financial analysis, computer applications, societal expectations, and topics of current interest.

502 Pharmacotherapeutics for Nurses. Semester course; 2 lecture hours. 2 credits. Prerequisite: PIO 505. Focus on the application of basic pharmacotherapeutic principles of drug categories to patient management.

504 Pharmacotherapeutics in Physical Therapy. Semester course; 1 lecture hour. 1 credit. An inventory course in pharmacotherapeutics for physical therapy students emphasizing the safe and appropriate use of drugs in the prevention and treatment of disease. Didactic presentations will focus on the principles and concepts of drug action and therapeutic indications for selected drugs and drug classes. The

effects of medications on physical function will be included, when appropriate.

505 Principles of Law—Pharmacy and Drug Laws. Semester course; 3 lecture hours. 3 credits. A study of federal and state laws (statutes and regulations) affecting the practice of pharmacy and the distribution of drugs.

510 Advanced Pharmacy Communication Skills. Semester course; 1 credit. A continuation of PHA 416 with an emphasis on interviewing and patient education skills.

511 Clinical Pharmacy and Therapeutics. Semester course; 5 credits. A continuation of PHA 411.

512 Professional Practice. 17 credits. The course is divided into four clerkship periods in which students participate in interdisciplinary patient care in the teaching institution and practice situations in community and hospital pharmacies. Emphasis is placed on the team approach to health care and the development of skill in all aspects of contemporary pharmacy practice. Included are student-patient interviews, rational drug therapy, drug information retrieval, modern drug distribution systems, and practice management.

513 Topics in Pharmacotherapeutics I. Off-campus semester course; 1–3 credits. A discussion of the pathophysiology, clinical pharmacology, rational drug therapy, drug therapy monitoring, and drug therapy management of patients with gastrointestinal, renal, or cardiovascular diseases.

514 Topics in Pharmacotherapeutics II. Off-campus semester course; 1–3 credits. A continuation of PHA 513 covering infectious diseases, diabetes mellitus, chronic obstructive pulmonary disease, oncology, pediatric diseases, geriatric diseases, and pain control.

515 Topics in Pharmacotherapeutics III. Off-campus semester course; 1–3 credits. A continuation of PHA 513 and 514 covering nutrition, nutritional aspects of diseases, and psychiatric disorders. Applications of problem solving strategies to the solution of drug therapy problems are discussed.

533 Nonprescription Medication. Semester course; 2.5 lecture hours. 2.5 credits. The pathological and clinical manifestations of disease states that lead to self-medication are discussed. Stress is placed on critical evaluation and rational use of nonprescription drug products promoted for patient selection and self-medication.

541 Pharmaceutical Ethics. Semester course; 2 lecture hours. 2 credits. A study of the current practice and philosophy of pharmacy. (Graded pass or fail.)

591 Special Topics in Pharmacy. Semester course; 1–4 credits. An elective course in which students may participate in research projects or undertaken special studies, through tutorial arrangements and/or library assignments, in the several areas of the pharmaceutical sciences. (Graded pass or fail.)

601 Advanced Pharmaceutical Product Development. Semester course; 3 lecture and 4–10 laboratory hours. 5–8 credits. An advanced study of the pharmaceutical, physicochemical, and engineering principles and technology underlying the development of various pharmaceutical dosage forms.

608 Clinical Radiopharmacy. Semester course; 1 lecture and 2 laboratory hours. 2 credits. Students receive training in the safe use, preparation, calibration, quality control, and

clinical diagnostic use of current and investigational radiopharmaceuticals in nuclear medicine practice. Emphasis will be placed on obtaining patient medication histories for the evaluation of agents capable of *in vivo* and *in vitro* radioisotopic test modification.

611 Advanced Physical Pharmacy. Semester course; 3 lecture and 0–4 laboratory hours. 3–5 credits. Detailed application of physicochemical principles to areas of pharmaceutical interest, including colloids, rheology, phase rule, complexation, kinetics, drug stability, and micrometrics.

612 Advanced Physical Pharmacy. Semester course; 3 lecture and 0–4 laboratory hours. 3–5 credits. A continuation of PHA 611.

621 Advanced Biopharmaceutics and Drug Disposition. Semester course; 3 lecture hours. 3 credits. Study at the advanced level of the relationships between the physicochemical properties of a drug and dosage form and the absorption, distribution, elimination, and pharmacological effects of the drug. Current theory and methodology involved in solving problems at the research level are emphasized.

622 Clinical Pharmacokinetics. Semester course; 2 lecture and 2 laboratory hours. 3 credits. The application of current pharmacokinetic theory to clinical problems involved in optimizing and monitoring drug use in patients. Particular attention is given to adjustment of drug dosage in individual patients with impaired drug elimination due to renal and hepatic dysfunction.

624 Pharmacokinetics. Semester course; 3 lecture hours. 3 credits. An advanced treatment of the kinetics of drug absorption, distribution, and elimination utilizing mathematical models, analog, and digital computers for analysis of linear and nonlinear biologic systems.

625 Pharmaceutical Analysis. 3 lecture hours. 3 credits. Theory and practice of analytical techniques for the quantitative and qualitative analysis of drugs in body fluids and other matrices. Emphasis is on chromatographic, spectroscopic, and immunoassay methodologies.

626 Pharmaceutical Analysis Laboratory. 2 laboratory hours. 2 credits. A continuation of PHA 625 with emphasis on providing "hands on" experience with modern techniques for analysis of drugs and drug metabolites.

631 Advanced Pharmacy Practice Management I. Semester course; 3 lecture hours. 3 credits. Classical, social, and systems views of management are introduced with emphasis on the uses of implicit control. The sociology of professions and the nature of the professional work are explored; the management of professional's work is discussed in detail. Design and operation of integrated drug information, drug distribution, and drug use control systems are explored.

632 Advanced Pharmacy Practice Management II. Semester course; 3 lecture hours. 3 credits. The planning and development of a total program in institutional drug use control is stressed with emphasis on current human and fiscal resource management theories and applications. Current management problems unique to institutional pharmacy practice are stressed.

635 Advanced Pharmacotherapeutics and Adverse Drug Reactions I. Semester course; 3 lecture and 6 laboratory hours. 6 credits. The rational therapeutic choices of drugs

with respect to pathophysiological considerations of diseases are emphasized. Clinical application of biopharmaceutics, pharmacokinetics, therapeutics, drug interactions, adverse drug reactions, laboratory findings, and other factors affecting drug efficacy in the context of the total care of the patient is stressed. Detection, clinical evaluation, and management of adverse drug reactions is also emphasized. Students receive advanced instruction in therapeutics and pathophysiology and learn to apply drug knowledge to problem solving using selected patient cases.

636 Advanced Pharmacotherapeutics and Adverse Drug Reactions II. Semester course; 3 lecture and 6 laboratory hours. 6 credits. A continuation of PHA 635.

637 Case Management Conference. Semester course; 2 lecture hours. 2 credits. Students present and analyze patient cases and selected therapeutic topics from their advanced practice rotations. Emphasis is placed on drug therapy in the context of the total management of the patient with multiple medical problems.

638 Therapeutic Case Challenge. Semester course; 2 lecture hours. 2 credits. Students discuss and debate subtleties and controversies in the drug therapy of patients encountered in their practice rotations.

650 Drug Literature Evaluation. Semester course; 2 lecture and 2 laboratory hours. 3 credits. A study, at the advanced level, of the techniques used to retrieve and evaluate clinical drug literature. Research methods and research design are taught to better prepare the student to evaluate published research.

690 Departmental Research Seminar. Semester course; 1 lecture hour. 1 credit. Required of all graduate students in pharmacy including students in the Pharm. D. program.

691 Special Topics in Pharmacy. Semester course; 1–4 lecture hours. 1–4 credits. Presentation of subject matter is by lectures, tutorial studies, and/or library assignments in selected areas of advanced study not available in other courses or as part of the research training.

692 Clerkship Training. Semester course; 1–4 credits. This course is designed to train Pharm. D. students to teach pharmacy students in clinical practice sites.

693–696 Advanced Practice. Semester course; 3–15 credits. A series of elective and required planned experiences to permit Pharm. D. students to utilize their knowledge of the pharmaceutical sciences in a variety of practice settings. Each course consists of one or more month-long rotations, each carrying three semester hours of credit. Rotations within a course offer different experiences under the same or a different instructor. Enrollment in any of these courses requires the permission of the director of the Pharm. D. program. Rotations are offered in the following areas: inpatient medicine, primary ambulatory care, specialty ambulatory care, drug information, infectious disease, mental health, department program management, management support programs, clinical inpatient program management, clinical outpatient program management, pediatrics, pharmacotherapeutic consultation, pharmacokinetic consultation, nutritional support.

697 Directed Research in Pharmacy. Semester course; 1–15 credits. Research leading to the M.S., Pharm. D., or Ph.D. degree.

BASIC HEALTH SCIENCES

Basic health science courses are included in the pharmacy curriculum. See Basic Health Sciences section for details on the following courses and faculty.

Anatomy 401

Biochemistry and Molecular Biophysics 402

Microbiology and Immunology 401

Pharmacology and Toxicology 403, 404

Physiology 482



PART V — School of Nursing

JOANNE K. HENRY, R.N., Ed.D.

Interim Dean

BETSY A. BAMPTON, R.N.C., Ed.D.

Interim Director, Undergraduate Program

LORNA MILL BARRELL, R.N., Ph.D.

Interim Director, Master's Program

BARBARA A. MARK, R.N. Ph.D.

Interim Director, Doctoral Program

The School of Nursing originated in 1893 as part of the University College of Medicine. Since then the educational program has evolved from a basic diploma program to multiple programs at the baccalaureate, master's, and doctoral degree levels. An active research program and continuing education opportunities are included. The School of Nursing continues to be a leader in nursing education in Virginia.

PHILOSOPHY OF NURSING

The School of Nursing supports the University's mission to provide a fertile and stimulating environment for teaching, learning, research, and service. The faculty of the School of Nursing have defined philosophies of nursing and nursing education. These philosophies were developed from an expression of mutual beliefs about human beings, human environments, health, the nature and scope of nursing practice, and the teaching-learning process underlying the education of the professional nurses.

Nursing is a human service directed toward assisting individuals, groups, and communities to strengthen adaptive responses to internal and external stressors in order to restore, maintain,

and/or promote the optimal state of health or facilitate a peaceful death. Nursing, as a practice discipline, is committed to the continuing evolution of the art and science of nursing through the use of nursing process and the development, implementation, and dissemination of nursing theory and research. Nursing realizes its goal of human service through diverse activities which include guiding people in practice of preventive health behavior, assisting ill individuals to regain their health and reduce their residual dysfunction, promoting environments which are beneficial to health, and eliminating stressors which are detrimental to health.

The School of Nursing's philosophy evolves from the following beliefs about man, his environment, and health:

Humans are biological, psychological, social, and spiritual beings who possess the capacity for rational thought and behavior. Each is unique in genetic endowment and life experiences. A dynamic interrelationship exists between body, mind, and spirit which is expressed as human wholeness. The dimensions of being and their interrelationships constitute human potential. Full human potential is realized through relationships with others.

All humans have a right to share in society's resources in realizing their human potential. People also have the right to make decisions about their lives as long as they do not bring harm to others. With the right to make decisions comes the responsibility for the consequences of these decisions for one's self and others.

Human environments possess internal and external dimensions. The internal environment consists of psychological, spiritual and physiological elements; the external environment consists of all these influences outside of individuals, including social, cultural, physical, and biological systems. There is a dynamic, interdependent relationship between internal and external environments. People and their environments are within human control; people have the potential to change or to be changed by their environments.

Health is a dynamic state of human functioning whereby individuals, groups, and communities continually adapt to internal and external stressors in an attempt to achieve optimal health, which is the attainment of maximum potential for daily living. State of health may vary from optimal wellness to serious or terminal illness according to severity of environmental stressors, adaptive ability, and access to resources. Healthy individuals, groups, and communities perceive themselves and are perceived by others to be functioning in an effective and integrated way. Because health is both self-defined and defined by others, conflicts in the definition of state of health may occur.

PROGRAMS

Bachelor of Science, Master of Science, and Doctor of Philosophy degree programs are offered through the School of Nursing.

Complete information regarding curriculum and admissions may be obtained by writing to the Office of the Dean, School of Nursing, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA 23298-0567.

FACILITIES AND RESOURCES

The faculty and administrative offices of the school are housed in the Nursing Education Building, 1220 East Broad Street. Additionally, this building has a nursing clinical resource laboratory, computer laboratory, and classrooms equipped with a full range of audio-visual equipment. Both graduate and undergraduate courses are also scheduled in other classrooms on campus.

The clinical laboratories for nursing courses are conducted in the MCV Hospitals and in numerous other hospitals and health agencies in the area. Students are given a diversity of experiences in hospital and community-oriented nursing.

ACCREDITATION

The baccalaureate degree program in nursing for students with no previous preparation in nursing and for graduates of diploma and associate degree programs is accredited by the National League for Nursing Department of Baccalaureate and Higher Degree Programs. The program is approved by the Virginia State Board of Nursing and graduates are eligible to take the registered nurse licensing examination.

The master's degree program is accredited by the National league for Nursing Department of Baccalaureate and Higher Degree Programs. The Primary Care Nurse Specialist programs (FNP, PNP, OGNP) are approved by the joint boards of nursing and medicine of Virginia.

NURSING ALUMNI

All graduates of the Medical College of Virginia School of Nursing, St. Philip School of Nursing, and the Richmond Professional Institute nursing program are eligible for membership in the Nursing Alumni Division of the Medical College of Virginia Alumni Association of Virginia Commonwealth University. The purposes of the division are to support and promote the School of Nursing. The division also provides support within the University to promote and encourage the development of nursing services of the highest possible quality, to stimulate professional growth, and to promote cooperation and fellowship among nursing alumni and students.

ANNUAL LECTURESHIPS

Outstanding scholars are brought to the campus through a variety of resources. Students in the School of Nursing have access to special programs of an intellectual and cultural nature on both campuses of the University.

The **Annual Nursing Lectureship**, established in 1966 by contributions from alumni and friends of the School of Nursing, brings to the campus each year a person of national stature in the field of nursing. Alumni and faculty plan and implement the lectureship, which serves as an open forum to many public speakers in the health fields.

The **Yingling Visiting Scholar Program** was established in 1981 by alumni and friends of Dr. Doris B. Yingling upon her retirement in recognition of her many years of service as dean of the School of Nursing. The fund supports visits by eminent scholars to the School of Nursing.

HONORS AND AWARDS

Dean's List. Recognition of high quality academic achievement is made through inclusion on the Dean's List, published at the close of each semester. Students who have carried at least 12 semester hours' credit and who have earned a grade of "C" or higher in all courses with an overall average of 3.5 or better are named to the Dean's List.

Sigma Theta Tau. The Medical College of Virginia School of Nursing Honor Society inducted its first members in the fall of 1976. This local honor society was accepted as a chapter of the national nursing honor society, Sigma Theta Tau, in the fall of 1977. The chapter, known as Gamma Omega, installed its first members in the fall of 1978. The purposes of Sigma Theta Tau are to recognize superior achievement and leadership qualities, to foster high professional standards, and to strengthen commitment to the ideals and purposes of the profession.

Becky Godwin Fund. This fund was established by former Dean Doris B. Yingling in 1978 following completion of the Honorable Mills E. Godwin, Jr.'s, second term as Governor of Virginia. The fund was established in memory of former Governor and Mrs. Godwin's only daughter, Becky. The interest on the endowment contributed to the Medical College of Virginia School of Nursing by Dr. Yingling provides funds to enhance student professionalism in nursing for individuals enrolled in the undergraduate and graduate programs. Awards from the fund are made on an annual basis by the dean.

Yingling Senior Achievement Award. Gifts to the institution to honor former Dean Doris B. Yingling have been used to establish an annual award to a senior student in the School of Nursing. Recognition is based on outstanding leadership ability and potential professional growth as determined by a selection of faculty and students.

Mable Montgomery Award. This award was established through gifts of faculty and students in honor of Miss Mable E. Montgomery, executive secretary of the Virginia State Board of Nursing, 1949-70. The award alternates annually between a senior student and a faculty member. Leadership, excellence in nursing, and outstanding personal qualities are considered in selecting the recipients.

Marguerite G. Nicholson Award. This award was established by alumni and friends of the

school to honor a beloved alumna and former faculty member. The award is presented annually to a graduating senior student who best demonstrates the humanitarian qualities of unselfishness, helpfulness to others, consideration, humility, and loyalty to the school.

Mayme B. Wilson Lacey Award. Established by alumni of the former St. Philip School of Nursing, this award honors an outstanding alumna of the school who served for many years as assistant director of nursing services for MCV Hospitals. The recipient must be a well-rounded individual committed to nursing as a profession, who gives consistently good nursing care, has the ability to work well with the health team, and shows promise of supporting professional organizations.

Temple Memorial Award. The senior and junior classes, 1976-77, and the alumni from the School of Nursing established this award in memory of President and Mrs. T. Edward Temple. The award is given annually to a graduating student in the master's degree program. The recipient must possess characteristics that demonstrate exemplary performance in the advocacy role for the consumer of health care services and for the profession of nursing.

Martha M. Borlick Research Award. This award was established in 1980 by an alumna in honor of Dr. Borlick who served as chairman of the Department of Community Health Nursing from 1970-1978. The annual award honors a graduate student in nursing research as evidenced by the master's thesis.

Registered Nurse Student Award. The Registered Nurse Student Award is given in recognition of performance and achievement within the School of Nursing. The award is presented annually to a graduating senior who demonstrates excellence in clinical expertise, leadership, and personal qualities. This award is given with funds provided by faculty in recognition of the increasing number of registered nurses returning for baccalaureate degrees.

Student Nurses' Association Award. Initiated by members of the organization, this award is given in recognition of outstanding participation in the Student Nurses' Association at MCV/VCU. The award is presented to a senior SNA member who has demonstrated leadership, dedication, and enthusiasm for the nursing profession through involvement in the organization.

FINANCIAL ASSISTANCE

State Scholarship Fund. Both undergraduate and graduate students may apply for financial assistance from the State Scholarship Fund. Applicants must be residents of Virginia who intend to practice nursing in the state following completion of the educational program. Information may be obtained by writing to the Office of UES/Financial Aid, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA 23298-0244.

Bachelor of Science Program

ADMISSION REQUIREMENTS

Applications for admission are welcomed from men and women who have a sincere interest in preparing for a career in professional nursing. In selecting students for admission, the Admissions Committee looks for evidence of character, ability, maturity, and sound academic preparation. The committee attempts to choose applicants who show the greatest promise of profiting from the opportunities offered by the university and of preparing for a positive contribution to the practice of nursing and community life.

Applicants for admission must either be eligible for readmission or must be in good standing at the college last attended. Usually, only those science credits earned with ten years preceding admission will be considered for transfer.

A minimum of 60 semester hour credits with a quality-point ratio equivalent to 2.3 is required; however, a ratio of 2.5 on a 4.0 scale is recommended. Computation of the quality-point average utilizes academic courses only. A grade of "D" in any required course is not acceptable.

Foreign applicants who do not use English as their natural language must have a minimum TOEFL score of 550.

Procedures. Applicants are required to submit specific records in support of their applications. In order to allow sufficient time for the careful and thorough review given to each application, these records should arrive by January 15 preceding admission to the junior year. Applications may be obtained by writing the Director of UES/Admissions, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA 23298-0632, (804) 786-0488.

Automatic admission into the School of Nursing is available to pre-nursing candidates who present an academic diploma, minimum high school GPA of 3.2, rank in the top quarter of

their class, have combined SAT scores above 900, and have been interviewed in the School of Nursing prior to acceptance. Students wishing to pursue this option should notify the Coordinator of Pre-Health Sciences Advising, College of Humanities and Sciences, Virginia Commonwealth University, Richmond, VA 23284-2012, (804) 367-1673.

1. Formal application for admission to the junior year—Application to be completed by the applicant and submitted as early as possible after September 15 of the year preceding entrance.

2. Secondary School records—Should be sent directly to the Admissions Office by the school.

3. College transcripts—An official transcript of record listing all work must be submitted from each college attended, including summer sessions.

4. Course summary—Applicants are expected to provide a listing of courses (with titles) that they expect to complete during the year preceding admission to the School of Nursing.

5. Test results—All applicants must submit the results of the Scholastic Aptitude Test of the College Entrance Examination Board. If this test has been taken previously, it need not be repeated, but the earlier results must be submitted.

6. Self-evaluation—All applicants are expected to complete the self-evaluation form enclosed in the application kit.

7. Personal evaluation—Three evaluations are required of each applicant. Appropriate forms are provided.

8. Personal interview—Interviews are strongly recommended. Applicants desiring an interview should make an advance appointment.

9. Medical examination—A complete medical examination is required within six months prior to admission or as specified by the University Student Health Service. Appropriate forms for the report will be provided.

Upon receipt of all required forms and records, the student's credentials are submitted to the faculty admissions committee for review and decision. Applications received prior to January 15 will be given priority for review and applicants usually notified by April 1. Students may be admitted pending successful completion of prerequisites during the spring and/or summer semester. If the courses are not completed, the admission offer is withdrawn.

Sufficient proficiency in mathematics for computing medication dosages is one requirement for satisfactory completion of NUR 301—Introduction To Nursing and for admission to the nursing courses of the second semester. For this reason, following acceptance, the student will receive information for ordering a programmed instruction text in calculating drug dosages along with study guides. Students are required to take an examination on drug calculations during orientation week.

Registered Nurse Applicants. The School of Nursing provides an opportunity for registered nurses to be admitted to the baccalaureate program. Graduates from state-approved diploma programs and associate degree programs in nursing, who are currently licensed to practice, may be admitted for part- or full-time evening, weekend, and day study.

The Weekend Program is designed for the special learning needs of experienced, self-directed registered nurses and is partially funded by the Division of Nursing of the U.S. Department of Health and Human Services (NU 23169-01). Students will work independently in their own setting and be required to come to the MCV campus once a month. Each student will be assigned a preceptor and will have access to faculty by telephone as needed.

Special students may enroll in selected courses offered by the School of Nursing. Decisions for enrollment in courses are based on permission of the instructor, space availability, and designation of courses as "open to special students." Special students who wish to be admitted to the nursing major may transfer a maximum of six (6) semester credits into the upper division. Courses transferred will be considered as elective unless the courses taken are required in the major.

Admission Requirements and Procedures. Refer to information above. The same lower-division prerequisites are required of the registered nurse student as of the generic student.

In addition, the registered nurse applicant must supply an official copy of the nursing school transcript and a copy of his or her most recent nursing license.

RN students may be provisionally admitted into the School of Nursing and take selected courses prior to completing the lower division courses.

Establishment of Credit. The registered nurse student may establish credit for courses in several ways: (a) through proficiency examinations as

explained below; (b) through transfer of credit from other colleges; (c) by portfolio; and (d) through taking courses.

Proficiency examinations are of several kinds:

A. Those developed and distributed by the College Entrance Examination Board. Information concerning these tests, called College Level Examination Program (CLEP) tests, may be obtained from the CLEP Administrator, Academic Campus, Virginia Commonwealth University, (804) 367-6032. They are given on a monthly schedule, and arrangements may be made for these tests one month prior to the testing date. Subject examinations are available in multiple areas as listed in information available from the College Entrance Examination Board (CEEB). Semester hour credit is granted and satisfactory scores are determined in accordance with the recommendations of the CEEB and vary with different subjects. Students may earn full course credit by examination for general education courses.

B. Those given by the faculty of the School of Nursing. These proficiency examinations in nursing and other closely allied courses include teacher-made and standardized examinations. Students may obtain study guides from the School of Nursing for review prior to the examination. Course credit is given upon successful performance on the examinations. Students may earn full course credit by examination for courses in the nursing curriculum shown below:

NUR 361	Nursing Science
PHA 381	Pharmacotherapeutics in Nursing
NUR 320	Medical-Surgical Nursing I
NUR 421	Medical-Surgical Nursing II
NUR 342	Health Promotion, Women and Children
NUR 350	Psychiatric Mental Health Nursing
NUR 431	Health Problems of Women and Children

A fee is charged for each examination to cover cost of materials.

Length of Program for Registered Nurses. The length of each registered nurse student's program within the major is determined by performance on the proficiency examinations. The maximum length of full-time study is two academic years on the MCV campus.

It is possible, however, to complete the nursing major requirements in one calendar year. This special plan is for the registered nurse who establishes sufficient credit through proficiency examinations. The initial course in the RN curriculum is taught in a seven-week summer session (days) or in the fall semester (evenings or

weekends). Upon satisfactory completion of the summer session, the registered nurse enters the senior year and completes requirements for a degree in two semesters.

The Admissions Committee is responsible for the placement of students in the curriculum. Their decision is based on the performance of the applicant in all previous educational experiences and in the nursing proficiency examinations.

Once the liberal arts requirements have been met or a plan for their acquisition is available, application should be made to the School of Nursing. Application materials should be requested nine months prior to expected admission to the School of Nursing.

RN TO MASTER'S

The RN to Master's Program is designed for registered nurses who seek an accelerated path to the Master of Science in Nursing. The program recognizes the special learning needs of experienced, self-directed nurses who have completed diploma or associate degree programs. Outstanding registered nurse applicants who have completed the 60 semester credit hours of prerequisite courses can complete the requirements for a Bachelor of Science in nursing while beginning course work for the Master of Science in nursing.

Registered nurses who have achieved baccalaureate degrees in other fields may be admitted directly to the M.S. program in nursing. Individual advising and program planning is required.

Further information will be provided upon request.

CURRICULUM PLAN

The freshman and sophomore years of the baccalaureate degree program may be taken at the Academic Campus of VCU or at any other accredited junior or senior college. If the student attends another college to acquire the prerequisites, counseling is provided to assure the proper selection of courses. It is the applicant's responsibility to seek advice from the Admissions Office or the School of Nursing on courses taken prior to admission.

The student enters the MCV/VCU School of Nursing with the status of junior for the study of clinical nursing. Two years on the MCV Campus are necessary for generic students to complete the requirements for a Bachelor of Science in nursing degree.

For admission as a junior, the student must present a minimum of 60 semester hours. The following prerequisites apply:

	<i>Semester Hours</i>
COMMUNICATIONS	6
Required: English composition, 3 SH.	
Elective: speech and/or literature, 3 SH.	
HUMANITIES	12
Elective: history, philosophy, logic, literature, art, music, drama, religion, or foreign language.	
SOCIAL SCIENCES	12
Required: general psychology, 3 SH. developmental psychology, 3 SH. ¹ general sociology, 3 SH. family, 3 SH.	
NATURAL SCIENCES	19-22
Required: general chemistry, 8 SH. human anatomy and physiology, 5-8 SH. ² microbiology, 3 SH. nutrition, 3 SH.	
MATHEMATICS	3
Statistics preferred; algebra or computer science courses accepted.	
OTHER ELECTIVES	5-8
No more than three credits in an activity course accepted	
Total semester hours credit	60

A typical program in the upper division curriculum is as follows:

Junior Year, First Semester

NUR 301	Introduction to Nursing Practice (First Block)	6
NUR 320	Medical-Surgical Nursing I (Second Block)	6
NUR 361	Nursing Science	3
PHA 381	Pharmacotherapeutics in Nursing	3
		18

Junior Year, Second Semester

NUR 342	Health Promotion, Women and Children (First Block)	6
NUR 350	Psychiatric-Mental Health Nursing (Second Block)	6
NUR 362	Health Assessment	3
NUR 372	Clinical Inquiry	1
		16

Senior Year, First Semester

NUR 431	Complex Health Problems, Women and Children	6
NUR 410	Community Health Nursing	6
NUR 450	Gerontologic Nursing	3
NUR 472	Dimensions of Professional Nursing	3
		18

¹ Child or adolescent psychology acceptable.

² Students enrolled in a college that does not offer an appropriate course in human anatomy and physiology may take this in the VCU summer session between the freshman and sophomore years.

Entering students must be certified in first aid and cardiopulmonary resuscitation and maintain certification throughout enrollment in the School of Nursing.

Senior Year, Second Semester

NUR 421	Medical-Surgical Nursing II (First Block)	6
NUR 422	Leadership and the Nursing Process (Second Block)	6
NUR 471	Managerial Theory for Nursing Practice	3
	Elective	<u>2-3</u>
		17-18

The School of Nursing reserves the right to restrict enrollment in clinical courses to matriculated nursing students seeking a Bachelor of Science degree. Enrollment in all clinical nursing courses is based on availability of space.

Following is a typical curriculum plan for the full-time RN student who passes all proficiency examinations satisfactorily.

Fall Semester

NUR 302	Dynamics of Professional Nursing Practice	3
NUR 362	Health Assessment	3
NUR 450	Gerontologic Nursing	3
	Elective	<u>3</u>
		12

Spring Semester

NUR 470	Concepts Basic to Professional Accountability Within the Health Care System	6
NUR 422	Leadership and the Nursing Process	<u>6</u>
		12

Summer Session

NUR 410	Community Health Nursing	<u>6</u>
		6

Commuting and Community Practice.

Students are assigned to a variety of hospitals and health agencies in the Richmond area. Occasionally, these assignments may be during evening hours. Public transportation is sometimes available to reach these assignments, but use of an automobile is often necessary, especially in community health nursing. Transportation costs vary widely each semester and may range from very little to more than \$100. Students who anticipate need of financial assistance for transportation costs should apply to the Office of Financial Aid in advance.

Use of Educational Materials. During the program students have access on a limited basis to certain equipment, such as tape recorders and

books not owned by the University libraries. It is expected that all such materials will be used with care and returned in good condition within the time limit specified. If not, students will be expected to pay the cost of repair or replacement. If such obligations are not met, course grades will be withheld from the student and will not be posted on the permanent record. Thus, graduation, recommendation to take the National Council Licensure Examination for Registered Nurses (NCLEX-RN) Examination, or transfer to another college or university would be impaired by failure to meet these obligations.

ACADEMIC REGULATIONS

The student is classified as a junior when enrolled in upper-division courses. Calculation of grade-point average is based on grades in the School of Nursing.

Method of Grading. The clinical laboratory grading system is *satisfactory* or *unsatisfactory*. Unsatisfactory clinical application results in a grade of "F" for the course. The student may not receive a grade of "I" in the *clinical laboratory component of a nursing course*. In case of extenuating circumstances, exceptions to this policy may be made by group decision of faculty teaching the course. (See information concerning grades in Part I, *Grading System*, of this bulletin).

Class Attendance. Attendance at all classes and laboratories is expected. Absences without valid reason are not condoned. Requests for absence on a convenience basis are not granted. Students are allowed to make up course requirements only if the absence is excused. Determination of what constitutes an excused absence will be the responsibility of the course faculty. Absence from clinical laboratory must be reported to the instructor by the beginning of the shift during which the laboratory hours occur. Any student who attends fewer than 87% of laboratory sessions for any course will receive a grade of "F." In case of extenuating circumstances, exceptions to this policy may be made by group decision of faculty teaching the course.

Academic Progression. Students in the first semester must earn at least a "C" in the first clinical nursing course and at least a "D" in pharmacology in order to proceed in subsequent nursing courses. Progression to the senior clinical courses is based upon satisfactory completion of the courses of the first year and a cumulative grade-point average of not less than 1.91.

Courses in the nursing major without a clinical component may be taken before senior status is conferred. A student whose grade-point average is less than 2.0 for two consecutive semesters in the curriculum will be referred to the Undergraduate Admissions, Policy, and Progression Committee for review and recommendation for continuance in the school.

Requirements for Graduation. To be a candidate for the degree of Bachelor of Science in nursing, the student must be recommended by the faculty and must meet the following criteria

- (a) Complete all prerequisites for the prescribed curriculum.
- (b) Earn a "C" (2.0) in all nursing courses.
- (c) Earn a cumulative average of "C" (2.0) in all work presented for graduation.
- (d) Enroll in the School of Nursing for the final two semesters of study.
- (e) Clear all financial obligations to the University, return all materials to the library, and fulfill any other specifically stated special requirements pertaining to the educational program.

Once the student enrolls in the school, the degree requirements must be completed within five calendar years. The credentials and programs of a candidate unable to meet this requirement may be evaluated by the Undergraduate Admissions, Policy, and Progression Committee upon request of the candidate. Such a candidate may have to meet additional requirements established during the interval since matriculation.

Academic Probation. A student is placed on academic probation when either the overall cumulative average falls below a 2.0 or a "D" or below is earned in a nursing course. The minimum passing grade for nursing courses is "C."

Removal of Academic Deficits. Nursing courses with a grade of "D" or below may be repeated once upon written approval of the dean or designee. When that course is repeated and a grade of "D" or below is earned, the student must withdraw from the school.

The student who has failed more than one clinical course must petition the Undergraduate Admissions, Policy, and Progression Committee. The committee will review the case and recommend whether the student may proceed in the nursing major.

Dismissal from a Clinical Course. The faculty and administrators of the School of Nursing are committed to the belief that learning does not take precedence over the physical or emotional

welfare of patients and their families. A student who evidences a course of conduct judged to be clinically unsafe may be dismissed at any time from a clinical nursing course. Unsafe clinical performance is defined as behavior which is actually or potentially dangerous to the patient by virtue of process or outcomes.

Separation from the School. A student who wishes to withdraw from the School of Nursing should discuss the plans with the program director. Before leaving the school, the proper forms must be obtained from the registrar and completed by the student. In addition to those standards of conduct described in the *Rules and Procedures of Virginia Commonwealth University* and the *Medical College of Virginia Honor Code*, a student may be suspended or dismissed from the school for failure to meet academic requirements or failure to exhibit the attitudes and skills deemed necessary to function as a professional nurse. The School of Nursing recognizes its responsibility to the nursing profession and to the consumer of health care. Therefore, any action by a nursing student considered to be unprofessional conduct shall be deemed cause for disciplinary action. Unprofessional conduct may be defined as, but is not limited to

- (a) Fraud or deceit in filing application for admission to school, such as false representation on the application.
- (b) An act which violates the accepted social norms regarding conduct of one person toward another. Social norms refer to the laws, written or unwritten, which protect the individual and/or his property from unwanted acts of another such as stealing, lying, cheating, and slander.
- (c) Conviction of a felony.

The School of Nursing subscribes to the statement set forth in Section VIII: 8.1 of *The Law, Governing the Examination, Licensure and Practice of Professional Nurses and Practical Nurses*, as issued by the Virginia Board of Nursing. When applicable, these standards will be used in determining a student's eligibility for continuance in, or readmission to, the nursing major.

Readmission. The student desiring readmission is given equal consideration with other applicants being reviewed at a scheduled meeting of the Undergraduate Admissions, Policy, and Progression Committee. The procedures for

readmission are as follows:

- (a) The applicant for readmission must submit a letter to the Undergraduate Admissions, Policy, and Progression Committee requesting review.
- (b) Prior to acceptance for readmission, the applicant is required to be interviewed by the full Undergraduate Admissions, Policy, and Progression Committee or by individual members thereof.
- (c) The applicant's record from the School of Nursing will be used as one of the criteria for making a decision. The applicant's employment record, educational record, and other experiences subsequent to termination at the School of Nursing will also be considered.

Graduate Degree Programs

The School of Nursing offers programs of study leading to the Master of Science and Doctor of Philosophy degrees.

The purpose of the master's program is to prepare advanced practitioners in nursing. Graduate education in the School of Nursing has three major thrusts. Students integrate the process of development, use, and transmission of knowledge and research in an advanced practice area; they learn to apply knowledge in clinical practice; and they develop understanding of how social, political, and economic forces impact on nursing practice and health care delivery. Advanced study in the master's program emphasizes a synthesis of knowledge from nursing and related disciplines together with a systematic investigation of underlying concepts; students have a thorough foundation for further study at the doctoral level.

The Master of Science program includes major study in community health, gerontologic, maternal-child (perinatal and infant-child), medical-surgical, oncology, nursing administration (executive and clinical manager), primary care specialist (family, gerontologic, obstetric-gynecologic, and pediatric), and adult and child psychiatric-mental health nursing.

The purpose of the Doctor of Philosophy program is to prepare scholars and researchers in nursing with the depth of educational preparation to engage in significant independent investigation in areas critical to the advancement of clinical nursing practice and nursing administration. The concentration in nursing administra-

tion prepares nurses for research and/or educational positions in a variety of settings, including academic, corporate, public, and private institutions concerned with the delivery of patient care and health services. The clinical science option which is offered cooperatively with the Department of Microbiology and Immunology of the School of Basic Health Sciences prepares nurses to engage in microbiological/immunological research related to the clinical practice of nursing.

Information regarding admission requirements and procedures and a complete description of these graduate programs may be found in the *Virginia Commonwealth University Graduate Bulletin*. Applications may be obtained from the School of Graduate Studies, Virginia Commonwealth University, Richmond, VA 23298-0568.

To provide sufficient time for review of applications in the School of Nursing, it is advisable that completed applications for the master's program be received by June 1 for fall semester, November 1 for spring semester, and April 1 for summer session admission. Graduate Record Examination scores may be forwarded separately.

FACULTY

Professors: Francis; Kissinger; Munjas

Associate Professors: Bampton; Barrell; Bobbitt; Calderon; Clarke; Collins; Crowder; Crummette; Exley; Henry; Mark; Olgas; Smith; Strauss; Tesh; Wyman; Younger

Assistant Professors: Bell; Collins; Corley; Cox; Detmer; Fernandez; Fleming; Griffiths; Hutton; Jones; Lacey; Lange; Munton; Sawin; Stuckey; Turner; Waters; Youngkin

Instructors: Brant; Davis; Dormire; Erickson; Evans; Furlani; Grap; Hart; Jaeger; Lipp; Lutz; Pierce; White

Clinical Faculty: Allport; Ames; Astin; Bartolacci; Bass; Bowdler; Campanella; Centor; Condrey; Connelly; Cushnie; Davis; Emroch; Farrell; Fleming; Gamel-McCormick; Gersch; Geldmaker; Hafford; Hamric; Hanna; Harris; Helmick; Hundley; Hyle; Jacobs; Jacobec, N.; Johnson; Jones; Jordan; Kane; Kedy; Keitz; Kenley; Kennedy; Keohane; Knutsen; Kudless; Lindamood; Lynch; Marshall; Martin; Meek; Miller; Modigh; Morris; Mullins; Murmer; McMahon, D.; McMahon, J.; Nelson, B.; Oganowski; Ross; Savage; Settle; Smith, L.; Smith-Jones, S.; Snipes; South; Spiegel; Sydnor; Vaughan; Wright

COURSES OF INSTRUCTION (NUR)

PHA 381 See School of Pharmacy.

301 Introduction to Nursing Practice. 7.5-week course; 6 lecture and 18 clinical laboratory hours. 6 credits. Provides foundation for subsequent learning in nursing specialty courses. Builds on lower division course content and

learning activities. Focuses on development of students as professional nurses, on learning and applying the nursing process, on developing effective communication skills and beginning-level nursing skills for providing patient care.

302 Dynamics of Professional Nursing Practice. Fall or summer session; 2 lecture and 3 clinical laboratory hours. 3 credits. Course designed for RN students who already have a knowledge base in nursing. The course is intended to refine the student's understanding of the nursing process, communication, and professionalism. Theory encompasses man's adaptation to stress, entry into the health care system, and the further development of a concept of nursing. Students also study communication within the family, major stressors, and theory of groups. Clinical application is composed of supervised clinical nursing practice or independent nursing practice.

320 Medical-Surgical Nursing I. 7.5-week course; 6 lecture and 18 clinical laboratory hours. 6 credits. Prerequisite: NUR 301. First of two courses dealing with the care of the hospitalized adult. Designed to further the student's ability to use the nursing process to provide care to patients with simple pathophysiological conditions requiring nursing interventions encompassing preventative, therapeutic, and rehabilitative aspects. Focus will be on patient problems which affect primarily a single body system and which have relatively predictable outcomes. Emphasis will be placed on development of clinical skills needed for implementation of the nursing process.

342 Health Promotion, Women and Children. 7.5-week course; 6 lecture and 18 clinical hours. 6 credits. Application of principles of stress and adaptation, growth and development to wellness and minor health deviations. Emphasizes the role of the nurse in health promotion during childbearing and childrearing.

350 Psychiatric Mental Health Nursing. 7.5-week course; 6 lecture and 18 laboratory hours. 6 credits. Extends learning from introductory course. Explores mental health and illness and expands skills in nursing process in care of mentally ill. Focuses on concepts of stress and adaptive responses and on influence of family and community on development and treatment of mental health illness. Clinical laboratory experiences are provided in hospitals and community settings.

360 Clinical Practice in Nursing. Summer session; 3 credits. Extends the student's abilities to use nursing process in providing nursing care through work-study arrangements. Expands proficiency in assessment, planning, and intervention. Agreement for employment required to enroll in this course.

361 Nursing Science. Semester course; 3 lecture hours. 3 credits. Builds on pre-nursing science courses. Utilizes a conceptual and systems approach to the pathophysiologic basis of nursing assessment and interventions.

362 Health Assessment. Semester course; 2 independent study hours and 2 clinical laboratory hours. 3 credits. Provides students with the opportunity to synthesize knowledge and gain skills for the assessment of the client's health status; includes history-taking and assessment of body systems and differences which occur from birth to senescence.

372 Clinical Inquiry. Short course; 15 lecture/seminar hours. 1 credit. Workshop format to present didactic and

experimental content relative to clinical nursing research. Planned research activities continue in conjunction with clinical nursing courses throughout the semester.

410 Community Health Nursing. Semester course; 2.5 lecture and 10.5 clinical laboratory hours. 6 credits. Based on knowledge and practice skills from first year of professional nursing education. Assists in expanding knowledge and skills in giving care to individuals, families, and communities. Includes knowledge from community health nursing and public health: family theories, epidemiology, biostatistics, and community organization and planning. Clinical laboratory experiences are provided in official and private agencies, school systems, and other health care delivery systems.

421 Medical-Surgical Nursing II. 7.5-week course; 6 lecture and 18 clinical laboratory hours. 6 credits. Prerequisites: NUR 301, 320, 340, 350. Second of two courses dealing with the hospitalized adult. Designed to expand the knowledge base and clinical skills mastered in NUR 320 and to further the student's ability to use the nursing process in assisting patient's and family's adaptation to the stressors of illness. Major focus is on patient problems which affect multiple body systems and which have relatively unpredictable outcomes.

422 Leadership and the Nursing Process. 7.5-week course; 4 lecture and 24 clinical laboratory hours. 6 credits. Prerequisites: NUR 301, 320, 350, 421. Provides senior student opportunities for synthesis and practice in complex nursing situations. Class hours provide the opportunity for discussion of nursing problems encountered in caring for groups of patients with varying degrees of illness. Clinical experience/practice includes care of groups of patients as well as of individuals. Opportunity to practice management skills as a first-level manager is provided.

422E Leadership and the Nursing Process. Semester course; 3 lecture and 9 clinical laboratory hours. 6 credits. A work-study course designed for RN students who are working. Provides students opportunities for synthesis and practice in complex nursing situations. Seminars allow for discussion of nursing problems encountered in the care of persons of different ages and health situations. Clinical practice includes care of individuals and groups as well as practice of management skills in a first-level management role. An individualized contractual experience provides an opportunity to plan and implement a project related to nursing managerial role in a health care agency where the student is employed.

431 Complex Health Problems, Women and Children. Semester course; 3 lecture and 9 clinical hours. 6 credits. Application of nursing process to complex health care situations involving high-risk maternity patients and ill children with major health deviations.

450 Gerontologic Nursing. Semester course; 3 lecture hours. 3 credits. Introduction to gerontologic nursing, normal and abnormal physiologic, psychologic, and sociocultural changes with aging. Focuses on nursing interventions to restore and maintain optimal health.

470 Professional Accountability for Nurses Within the Health-Care System. Semester course; 4 lecture and 2 independent study hours. 6 credits. This course is a combination of NUR 471 and 472. Enrollment is limited to RN students. Content includes managerial theory, legal, and

political issues and introduces the research method and research findings as the basis for accountability in professional and public domains.

471 Managerial Theory for Nursing Practice—Health Care Systems and Situations. Semester course; 3 lecture hours. 3 credits. Designed to explore and acquire working knowledge of selected concepts and principles of administration and management within the health care systems and situations. Students utilize theory in case presentations and problem solving. The course establishes a base for assuming leadership roles.

472 Dimensions of Professional Nursing. Semester course; 3 lecture hours. 3 credits. Expands concept of nursing in areas of professionalism, health policy, nursing theory, and research.

492 Elective Study. 1 to 5 credits. Prerequisite: consent. Independent study projects planned to meet the learning objectives of the student.

GRADUATE COURSES IN NURSING

The descriptions provided here are for the courses in the major in nursing and are restricted to students in this major. Please see other sections in this bulletin for courses in other departments; viz., human genetics, biostatistics, physiology, and other basic sciences.

Courses in related fields and cognate areas which are offered at the Academic Campus are described in the *VCU Graduate Bulletin*. Lecture hours may be used as seminar, in which case the hours are doubled.

500 Contemporary Nursing. 3 lecture hours. 3 credits. Designed for analysis and evaluation of conceptual models of nursing and related theories in nursing. Core content to be applied in all advanced practice courses.

505 Clinical Teaching in Nursing. 3 lecture hours. 3 credits. Focuses on theories and principles related to teaching and evaluation for patients, nursing staff, and students. Explores multiple teaching strategies and learning styles and application of teaching and evaluation methods to the clinical situation.

506 Advanced Nursing Practice: Sociopsychologic Concepts. 3 lecture hours. 3 credits. Examines selected sociopsychologic theories and concepts and relates them to the practice of professional nursing. Focuses on theories explaining patients' responses to changes in health status.

507 Advanced Nursing Practice: Biophysiological Concepts. 3 lecture hours. 3 credits. Focuses on selected physiological concepts that underlie the identification of specific nursing diagnoses and nursing interventions at an advanced practice level. Includes individual ineffective coping, pain, alterations in energy, tissue perfusion, sensory-perceptual systems, immune response, wound healing, sleep patterns, fluid and electrolyte balance, acid-base balance, and thermo-regulation.

508 Advanced Nursing Practice: Health Care Delivery and Management. 3 lecture hours. 3 credits. Provides an

understanding of the context in which health services are managed and delivered. Explores social, ethical, and political issues affecting current and future nursing care delivery systems. Examines cost-effectiveness of nursing care in a variety of settings.

540 Infant Assessment. 2 lecture and 3 clinical hours. 3 credits. Presents infant (birth to two years) assessment techniques and tools which will prepare health professionals to adapt and utilize results of recent research findings for infants and families. Learn assessment scales that examine the infant's sleep patterns, behaviors, interactions with caregiver, and the environment. Clinical practice focuses on obtaining interobserver reliability in use of scales. Home visits with a partner are required.

570 Methods of Research. 3 lecture hours. 3 credits. Methods and processes of systematic investigation; critical analysis of studies; and relationships among theory, research, and practice leading to the development of a research proposal.

571 Principles of Epidemiology. 3 lecture hours. 3 credits. Provides theoretical foundation for understanding health problems and needs of American society. Analyzes factors that alter the course of disease and health problems in selected populations. Analyzes concepts, methods, and uses of epidemiology in human populations.

591 Special Topics. 1–3 credits. Explores specific topics in nursing theory and practice.

592 Directed Study in Nursing. 1–3 credits. Prerequisite: permission of instructor. Independent study in a specific area of nursing developed under the supervision of a member of the graduate faculty.

603 Advanced Gerontologic Nursing I. 2 lecture hours. 3 clinical hours. 3 credits. Examines physiological, psychological, and sociocultural processes associated with normal aging. Analyzes relevant theories, concepts, and research findings from the behavioral, social, and biological sciences as a basis for advanced nursing practice with older adults and their families. Emphasizes health promotion with individuals within the context of their functional capabilities, social support networks, and environment. Explores the advocacy role of the gerontological nurse specialist in sociopolitical issues affecting the health of the elderly. Provides clinical practica in community settings.

604 Advanced Gerontologic Nursing II. 3 lecture hours. 3 credits. Examines common high-risk physiological and psychosocial alterations associated with aging. Applied relevant theories, concepts, and research findings related to acute and chronic illness as a basis for advanced nursing practice with aging clients and their families. Stresses strategies for health maintenance within the functional capabilities and lifestyles of aging clients and future trends in the long-term system.

605 Advanced Practice in Gerontologic Nursing. 9 clinical hours. 3 credits. Prerequisites: NUR 507, 508, 603; corequisite: NUR 604. Stresses development of clinical competence required in delivering nursing care to aging clients and their families. Applies relevant theories, concepts, and research findings in advanced nursing diagnoses and therapeutics. Emphasizes working with individuals, families, groups, and interdisciplinary teams. Explores the role of the gerontological nurse specialist in delivering health care in difficult

settings. Provides clinical practica in a variety of community and institutional settings.

612 Advanced Community Health Nursing I. 3 lecture hours. 3 credits. Prerequisites: NUR 500, 506, Epidemiology, Biostatistics. Provides the theoretical foundation for advanced community health nursing practice. Examines and integrates public health science, nursing theories, and community.

613 Advanced Community Health Nursing II. 2 seminar and 6 clinical hours. 3 credits. Prerequisites: NUR 500, 506, 612 (Can be taken concurrently with NUR 612.) Provides the student with opportunity to apply theories and community health models of care to families and community groups in the advanced practice role. Permits students, in partnership with a community, to validate, analyze, and interpret data. Establishes a clinical practice based upon a diagnosed need and provides care to a family and group, using a recognized nursing model.

614 Advanced Community Health Nursing III. 9 clinical hours. 3 credits. Prerequisites: NUR 612, 613. Concentrates on a synthesis of the principles and practice of advanced community health nursing, public health, and management as the basis for development of the skills required for nursing leadership in positions in public/community health organizations and ambulatory care settings. Provides through prerequisites and course content the foundation for issue-related seminars and a community health practicum.

622 Cancer Nursing I. 3 lecture hours. 3 credits. Prerequisite: NUR 500 or permission of instructor. Provides a theoretical base for oncology nursing practice, emphasizing the integration and synthesis of relevant knowledge utilizing the nursing process. Covers cancer epidemiology, carcinogenesis, cancer pathology, risk factors, prevention, detection, diagnosis, and treatment methods for common adult malignancies.

623 Cancer Nursing II. 2 seminar, 6 clinical hours. 3 credits. Prerequisite: NUR 500 or permission of instructor. Provides the opportunity for an in-depth study and discussion of the economic, cultural, and spiritual impact the cancer experience has on the client, family, and community as well as the examination of selected quality of life issues.

624 Practicum in Cancer Nursing I. 9 clinical hours. 3 credits. Prerequisite: NUR 622. Provides experiences in care of clients and their families in a variety of settings in which prevention, diagnosis, and treatment occurs. Precepted clinical practica provide opportunities for evaluating and developing advanced clinical competence and for acquiring specialized skills needed for oncology nursing practice.

626 Nursing of Critically Ill Adults. 2 seminar, 6 clinical hours. 3 credits. Co- or prerequisite: NUR 507. Focuses on factors affecting the delivery of nursing care to patients in the acute and dynamic stages of complex medical-surgical conditions. Discusses the pertinent nursing diagnoses and interventions for these patients while using the framework of multi-system failure.

627 Nursing of Adults Recovering From Critical Illness. 2 seminar, 6 clinical hours. 3 credits. Prerequisite: NUR 507 or permission from the instructor. Focuses on relevant research findings that are applicable to the post-critical phases of illness in the adult patient. Examines the dynamic patterns of recovering illness, including communication, coping, energy depletion, restricted mobility, and pain. Discusses

nursing management with the goals of facilitating recovery, preventing long-term complication of therapy, and optimizing level of functioning in selected case examples.

628 Immunocompetence: Clinical Applications in Nursing. 1 lecture, 2 seminar and 3 clinical hours. 3 credits. Co- or prerequisite: NUR 507. Focuses on impaired immunocompetence across the life span as a result of secondary causes. Explores concepts and factors related to the phenomenon of immunocompetence using a nursing case management approach, analyzes clinical problems associated with immunodeficiency. Examines AIDS, infection, malignancy, auto immune disease. Examines management strategies such as transplantation, augmentation of host defenses, and other treatment modalities as they relate to and influence nursing care.

631 Health Problems of Women. 3 lecture hours. 3 credits. Focuses on advanced nursing practice related to logical health and illness changes of women. Includes pathophysiological, pharmacological, and nutritional management modalities. Develops clinical judgment in history and physical assessment and decision-making in management of common health problems.

634 Nursing Care of Women. 2 seminar and 6 clinical hours. 3 credits. Corequisite or prerequisite: NUR 500. Focuses on health care management of women through use of the nursing process. Emphasis on changing role of women in today's society. Health management focus on improving client's level of wellness.

635 Perinatal Nursing I. 2 seminar and 6 clinical hours. 3 credits. Corequisite or prerequisite: NUR 500. Focuses on nursing assessment, diagnosis, and intervention with the family during pregnancy, labor, delivery, and the postpartum period.

636 Perinatal Nursing II. 2 seminar and 6 clinical hours. 3 credits. Prerequisite: NUR 500. Focuses on high-risk family during pregnancy, labor and delivery, and the neonatal and postpartum periods. Nursing assessment, diagnosis, and intervention related to health promotion and prevention are used with high risk families.

641 Health Problems of Children I. 3 lecture hours. 3 credits. Focuses on advanced nursing practice related to common developmental, health, and illness changes of children. Includes pathophysiological, pharmacological, and nutritional management modalities; develops clinical judgment in history taking, physical assessment, and decision making in management of common health problems.

644 Nursing of Children I: Well and Minor Health Deviations. 2 seminar and 6 clinical hours. 3 credits. Corequisite or prerequisite: NUR 500. Focuses on health needs of well infants and children and their families. Major organizing concepts are development, infancy through childhood, systems, individual and family, adaptation, and nursing process. Common minor health deviations and dysfunctional patterns in infancy and childhood and nursing assessment and intervention are presented within a nursing diagnostic framework.

645 Nursing of Children II: Major Health Deviations. 2 seminar and 6 clinical hours. 3 credits. Corequisite or prerequisite: NUR 500. Focuses on the health needs of infants and children with major long- and short-term health deviations and those of their families. Major organizing

concepts are development, family systems, stress and coping, and nursing process. Major health deviations of infancy and childhood and nursing assessment and intervention are presented within a nursing diagnostic framework.

646 Nursing in Adolescent Health Care. 2 seminar and 6 clinical hours. 3 credits. Corequisite or prerequisite: NUR 500. Focuses on the adolescent client and family using nursing assessment, diagnosis to plan intervention related to health promotion, maintenance, and common health problems. Emphasis will be placed on joint planning between nurse and adolescent to establish priorities and promote increasing involvement of the adolescent in decision making regarding health.

654 Advanced Psychiatric-Mental Health Nursing I. 2 seminar and 6 clinical hours. 3 credits. Corequisites: NUR 500, 506, and Group Dynamics. Examines nursing and behavioral concepts and applies them in clinical practice with individual clients. Provides context for socialization as a specialist in psychiatric-mental health nursing.

655 Advanced Psychiatric-Mental Health Nursing II. 2 seminar and 6 clinical hours. 3 credits. Prerequisite: NUR 654. Addresses family theory and therapy principles and issues. Investigates family systems, social systems, and systems of health care. Provides supervised clinical practice with families selected to meet course and students' objectives and extends psychiatric-mental health nursing skills.

656 Advanced Psychiatric-Mental Health Nursing III. 2 seminar and 6 clinical hours. 3 credits. Prerequisites: NUR 654, 655. Provides synthesis of psychiatric-mental health nursing theory and focuses on groups in the community using theories related to group, change, consultation, organizational systems, and prevention. Prepares students to function competently with groups and individuals in community health-care settings.

662 Primary Health Care of Families. 2 seminar and 6 clinical hours. 3 credits. Prerequisite: permission of instructor. Provides concentrated study and clinical practice as a primary care nurse specialist. Utilizes family nurse practitioner skills in a variety of primary care clinical sites. Focuses on the application of family and chronic disease management theories and research to problems encountered in advanced clinical practice.

664 Health Problems of Adults I. 3 lecture hours. 3 credits. Focuses on advanced nursing practice related to common developmental, health, and illness changes of adults. Includes pathophysiological, pharmacological, and nutritional management modalities; develops clinical judgment in history taking, physical assessment, and decision making in management of common health problems.

665 Health Problems of Adults II. 3 lecture hours. 3 credits. Focuses on advanced nursing practice related to developmental, health, and illness changes of adults. Included are pathophysiological, pharmacological, and nutritional management modalities. Increases the students' knowledge and integration of essential clinical content and on the development of clinical judgment in history taking, physical assessment, and decision making in the management of common health problems.

671 Nursing Research II. 3 lecture hours. 3 credits. Prerequisite: NUR 570. Develops the student's understanding of research as scholarly activity in nursing. Examines external, internal, and technological influences on the definition of

nursing problems. Explores a variety of research methodologies utilized to address these problems and investigates how the findings are communicated and utilized in both practitioner and academic communities.

681 Nursing Administration I. 3 lecture hours. 3 credits. Explores individual and organizational factors which influence nursing administrative practice. Analyzes relationships between organizational variables and their impact on the design and management of a department of nursing.

685 Nursing Administration II. 2 lecture hours and 2 computer laboratory hours. 3 credits. Examines methods of measuring nursing productivity in a variety of settings. Describes use of automated systems to enhance nursing productivity. Concentrates on those systems which can be applied to management of patient care in a clinical nursing division. Uses computer-based systems as decision-support systems.

686 Nursing Administration III. 2 lecture and 2 computer laboratory hours. 3 credits. Analyzes systems involved in managing a department of nursing. Identifies the role of nursing service in development of an institutional budget. Describes automated systems which can assist nursing service administrators.

691 Nursing Research Practicum. 3 laboratory hours. 3 credits. Prerequisite: NUR 570. Participates in ongoing research. Implements research with faculty direction and supervision. Permission of instructor required.

692 Advanced Practice in Nursing Administration I. 2 seminar and 6 practicum hours. 3 credits. Focus is on planning and managing organizations for the cost-effective delivery of patient care. The practicum provides students the opportunity to critically evaluate the management of human, material, and financial resources in health care institutions.

695 Advanced Practice in Nursing Administration II. 2 seminar hours, 6 practicum hours. 3 credits. Focuses on the integration of administrative theory and practice in health care institutions. Emphasizes enhancing the nursing administrator's skills in long-term and strategic planning.

696 Advanced Practicum in Nursing. 9 clinical hours. 3-6 credits. Prerequisites: specialty courses in the clinical major. (At least 2 of the 3 specialty courses must be completed; the third specialty course may be taken concurrently with this course by permission.) Focuses on advanced nursing practice in the student's clinical major and on advanced clinical practice roles of clinician, teacher, administrator, consultant, and researcher.

701 Theory Development in Nursing I. 3 lecture hours. 3 credits. Prerequisite: admission to the doctoral program or permission of program director and course faculty. Examines structure of knowledge in nursing, the metaparadigm of nursing, selected models of nursing, and nursing theories. Analyzes, evaluates, and contrasts conceptual models and theories and determines their utility for developing nursing knowledge.

702 Theory Development in Nursing II. 3 lecture hours. 3 credits. Prerequisite: NUR 701. Explores various philosophies of science and examines factors influencing the development of nursing theory and the emergence of nursing as a scholarly discipline. Analyzes impact of economic, social, political, and scientific factors on discipline of nursing.

703 Theory Development in Nursing III. 2 lecture hours and 1 fieldwork hour. 3 credits. Prerequisite: completion of NUR 701 and NUR 702. Selects, derives, and subjects to limited testing theoretical statements in nursing.

715 Analysis of Health Care Policy Related to Nursing Practice. 3 lecture hours. 3 credits. Systematically studies policy which has shaped the practice of nursing and health care. Analyzes the process of policy formulation, implementation, and evaluation by contrasting a variety of policy-making models. Studies the implications of past and present health policies as they relate to the delivery of health care and the allocation of resources for nursing.

721 Concept Analysis in Nursing Administration I. 3 lecture hours. 3 credits. Prerequisite: admission to doctoral program. Identifies and examines concepts in nursing administration from the perspective of research relevant to the management of clinical patient care. Includes patient classification and acuity systems; scheduling and staffing systems and their relationship to work outcomes, costs, quality of care, and other measures of productivity; evaluates organizational strategies which promote utilization of research findings in clinical practice.

722 Concept Analysis in Nursing Administration II. 3 lecture hours. 3 credits. Prerequisite: NUR 721. Identifies and examines concepts in nursing administration from the perspective of research relevant to management of nursing services and the role of the nurse executive. Includes job satisfaction, job design, and theories which attempt to explain and predict nurse supply, demand, and turnover. Examines the organizational context in which decision making occurs. Appraises the process of organizational change, growth, and decline.

770 Advanced Nursing Research. 3 lecture hours. 3 credits. Examines the relationship between theory, research, and the

logic of casual inference. Investigates application of multiple modes of inquiry in nursing administration and clinical science research. Addresses major issues in implementation of research.

781 Organizational Analysis in Nursing Administration. 3 lecture hours. 3 credits. Prerequisite: admission to doctoral study or permission of program director. Analyzes current paradigms guiding nursing administration research. Studies concepts and models which attempt to explain organizational functioning and which are of particular usefulness in developing a substantive body of knowledge for the discipline of nursing.

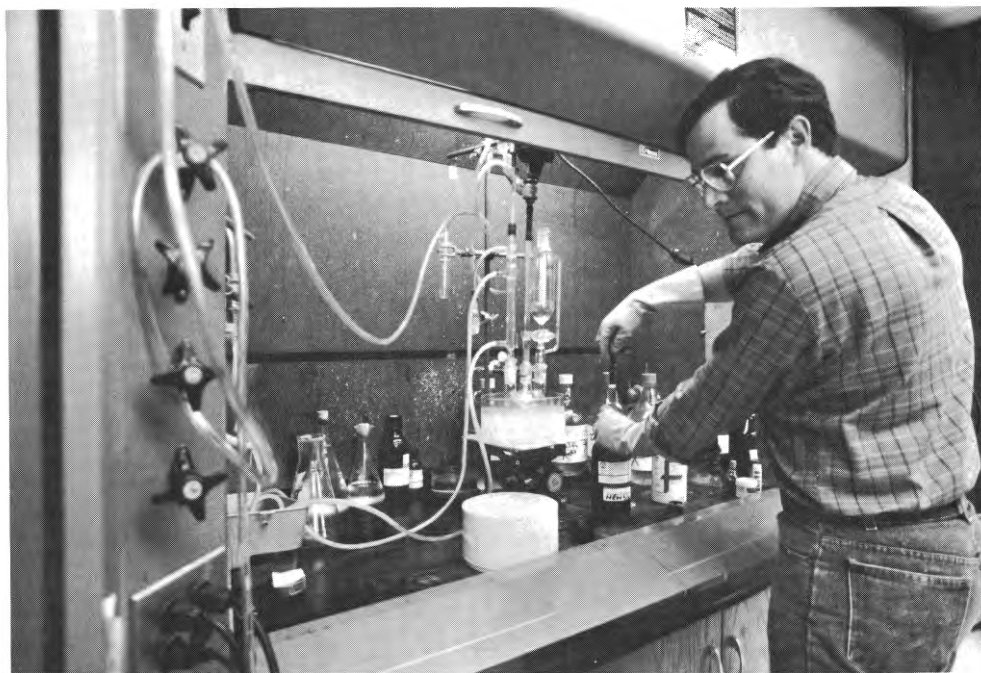
791 Special Topics. 1–3 credits. Prerequisites: admission to doctoral program and permission of instructor. Explores specific topics in nursing administration.

792 Directed Study in Nursing. 1–3 credits. Prerequisites: admission to doctoral program and permission of instructor. Independent study in a specific area of nursing developed under the supervision of a member of the graduate faculty.

797 Directed Research in Nursing. 1–3 credits. Prerequisites: 12 credits of doctoral-level course work and permission of instructor. Supervised investigation of selected problems in nursing research.

798 Thesis. 6 credits. The master's thesis constitutes carefully planned and executed research under the supervision of an advisor in conjunction with a thesis committee. The student writes and presents the required thesis in the area of clinical nursing interest.

898 Dissertation. 1–12 credit hours. Prerequisite: admission to candidacy. Original research.



PART VI — School of Basic Health Sciences

S. GAYLEN BRADLEY, Ph.D.

Dean

PHILIP H. COLEMAN, D.V.M., Ph.D.

Assistant Dean

Basic health sciences historically have been an integral part of the curriculum of medicine, dentistry, pharmacy, nursing and allied health fields. In the earlier years of this University, the basic sciences departments were administered by the School of Medicine with the dean of that school working with a committee of deans to establish policy for the teaching of the basic health sciences in the several professional schools. In 1966, by the action of the Board of Visitors, a separate School of Basic Sciences and Graduate Studies was established. In 1974, with the establishment of a University-wide graduate program, it became the School of Basic Sciences, and in 1984 it was renamed as the School of Basic Health Sciences. The Ph.D. programs of the Schools of Medicine, Pharmacy, and Basic Health Sciences continue to be administered by the dean of the School of Basic Health Sciences.

PROGRAM

All departments in the School of Basic Health Sciences provide instruction in their disciplines for students in the other schools. By developing large, strong departments with a good balance of faculty, postdoctoral fellows, and graduate assistants, it is possible to provide quality instruction for all the health professions schools and to maintain strong research, M.S., and

Ph.D. programs, including M.S. or Ph.D. programs combined with M.D. or D.D.S. degrees.

PH.D. AND M.S. PROGRAMS IN THE SCHOOLS OF BASIC HEALTH SCIENCES, MEDICINE, AND PHARMACY

The graduate programs in the Schools of Basic Health Sciences, Medicine, and Pharmacy at the Medical College of Virginia are under the supervision of the MCV Graduate Committee, which is composed of one faculty member from each department offering graduate degrees. In addition, nonvoting members representing the College of Humanities and Science and the Schools of Dentistry, Nursing, and Allied Health Professions meet with the committee. One member is chosen by the committee to serve as its convener. The convener serves as chairman of the MCV Graduate Committee.

The graduate program directors currently on the committee are Dr. George R. Leichnetz, anatomy; Dr. Glenn C. Van Tuyle, biochemistry and molecular biophysics; Dr. Vernon M. Chin-chilli, biostatistics; Dr. Alexander M. Clarke, biomedical engineering; Dr. Linda A. Corey, human genetics; Dr. Alfred Richard, medicinal chemistry; Dr. Philip B. Hylemon, microbiology and immunology; Dr. George W. Gander, pathology; Dr. Michael P. Holsapple, pharmacology and toxicology; Dr. Wesley J. Poyner, pharmacy and pharmaceuticals; and Dr. James Poland, physiology.

The committee establishes and maintains

admission requirements and rules and procedures for awarding the M.S. and Ph.D. degrees. Courses to be offered for graduate credit in these schools must have the approval of this committee prior to consideration by the University Graduate Council.

REQUIREMENTS FOR ADMISSION

1. The purpose of admission requirements and procedures is to encourage applications from competent students and to ensure selection of those whose motivation, ability, education, and character qualify them to pursue successfully graduate study in preparation for a scientific career.
2. The following credentials constitute an application and should be sent to the School of Graduate Studies, Virginia Commonwealth University, Richmond, VA 23298-0568.
 - (a) Application for admission on a form furnished to the applicant on request. A fee of \$10, in the form of a check or money order (payable to VCU), must accompany the application. The fee cannot be returned nor credited toward tuition payment.
 - (b) Official transcripts of all undergraduate and graduate work sent directly from the college or university registrars to the School of Graduate Studies.
 - (c) Letters of recommendation from three present or former teachers or others believed by the applicant to be qualified to evaluate fitness to engage in graduate study for the degree in the field of choice.
 - (d) A personal letter from the applicant summarizing his motivation, education, and aims in pursuing graduate study.
 - (e) Verbal, quantitative, and analytical portions of the Graduate Record Examination are required. Advanced tests (biology, chemistry, physics, or mathematics) are recommended where appropriate. The Medical College Admission Test or Dental Aptitude Test is acceptable in lieu of the Graduate Record Examination. For information on the GRE examination, contact the School of Graduate

Studies, Virginia Commonwealth University, Richmond, VA 23298-0568; or the Office of Student Services, School of Education, Virginia Commonwealth University, Richmond, VA 23284-2020; or Educational Testing Service, Box 955, Princeton, NJ 08540.

- (f) International applicants who do not use English as their natural language must have a TOEFL score greater than 550 — see section on international students in Part I of this bulletin.
3. Acceptance of an applicant is based upon the recommendation of the chairman of the major department.

REGISTRATION

While most students register for the first semester beginning in August, arrangements may be made to initiate graduate work at other times during the academic year.

SCHOLARSHIPS, ASSISTANTSHIPS, AND FELLOWSHIPS

A number of state or federal teaching assistantships, scholarships, or fellowships are available including the A.D. Williams fellowships (college endowment). The Daniel T. Watts Distinguished Fellowship is awarded to students with exceptional academic credentials.

A brief description of financial aid based on demonstrated need is contained in Part I of this bulletin. Need-based aid programs include National Direct Student loan, college work-study, and institutional loans.

STUDENT'S ADVISOR AND ADVISORY COMMITTEE

1. Each student shall have an advisor and an advisory committee.
2. Appointment and duties of the advisor:
 - (a) The initial advisor will be the director of the graduate program of the student's department or his/her designee.
 - (b) A permanent advisor shall be appointed from the graduate faculty by the dean of the School of Basic Health Sciences upon recommendation of the chairman of the student's major department. Appointment should be made no later than the end of the

second semester after matriculation. A change in advisor may be made by the dean of the School of Basic Health Sciences upon recommendation of the chairman of the major department.

- (c) The advisor shall be chairman of the student's advisory committee.
- (d) The advisor shall, with the student's advisory committee, have responsibility for guiding the student's academic program.
- (e) The advisor shall work out a plan of study with the student.
- (f) The advisor shall supervise the student's research work and thesis preparation and shall be one of the examiners of the thesis.
- (g) At the close of each academic year, the advisor shall submit to the Office of the Dean of the School of Basic Health Sciences a statement covering the progress of the student and recommendations as to whether the student's graduate studies shall be continued.

3. Appointment and duties of the student's advisory committee:

- (a) The student's advisory committee shall be appointed six months prior to the comprehensive examinations by the dean of the School of Basic Health Sciences upon recommendation of the student's advisor and after the recommendation of the chairman of the major department. The composition of the advisory committee shall be such that all significant areas of the student's course work are represented. For the purpose of examinations and thesis evaluation and because of special knowledge and distinction in the field of the candidate's work, an additional member who may be from a different institution may be appointed to the student's advisory committee by the dean of the School of Basic Health Sciences. Changes in the membership of the committee are made in the same way.
 - (i) The committee for the Ph.D. candidate shall consist of a minimum of five members as follows: the student's advisor; two other members of the graduate faculty

of the department in which major work is to be taken; and at least two other representatives of the graduate faculty outside the major department, where feasible, from two different departments.

- (ii) The committee for the M.S. candidate shall consist of a minimum of three members as follows: the student's advisor, one other member of the graduate faculty of the department in which major work is to be taken, and one representative of the graduate faculty outside the major department.
- (b) The student's advisory committee shall work with the student's advisor in guiding the student's graduate program.
- (c) The student's advisory committee shall recommend and approve a degree program (including foreign language if applicable) for the student as soon as practical. The proposed M.S. program should be filed with the dean of the School of Basic Health Sciences no later than the beginning of the third semester of study, and for the Ph.D. degree, six months prior to the comprehensive examinations. In approving a foreign language, the student's advisory committee is guided by the importance of the language in the scientific literature of the student's major subject.
- (d) The student's advisory committee shall conduct the oral comprehensive and final examinations.

GENERAL REQUIREMENTS FOR GRADUATE DEGREES

1. All full-time graduate students are expected to register for a minimum of 15 hours of graduate credit per semester and six semester hours during the summer. This requirement includes research. As an example, when students are registered for ten credits in formal courses, they are expected to undertake five credits of research under their advisors or other approved faculty members.
2. Students may not take the comprehensive examination for the Ph.D. degree if their overall grade-point average is less than 2.5

or if the grade-point average for courses within the major department is below 3.0. Students may not take final oral examination for the M.S. or Ph.D. degree if their overall grade-point average is below 3.0. Research credits shall not be counted in computing this average and shall be graded as S—satisfactory, U—unsatisfactory, or F—fail. Other grade interpretations are described in Part I of this bulletin.

3. All cases of unsatisfactory student performance, including any grade of "D" or "F," or failure to pass written or oral comprehensive examinations or final examinations require approval of the MCV Graduate Committee to permit students to continue.
4. Copies of the thesis (as required), prepared according to standards approved by the MCV Graduate Committee, shall be sent to members of the student's advisory committee three weeks or more before the date of the defense of thesis. These copies are to be submitted in temporary binders. Following acceptance of the thesis by the committee, the student must submit a copy of the thesis and a request for scheduling of the final examination to the dean of the School of Basic Health Sciences. After passing the final examination, it shall be the responsibility of the candidate to present to the School of Basic Health Sciences dean's office the minimum required number of copies (three for M.S.; four for Ph.D.) in final form suitable for binding. In consultation with the dean's office staff, the candidate shall be responsible for binding and processing of the thesis through University Library Services and for payment of all charges for these services.
5. A degree is granted only after all requirements have been fulfilled, including payment of all fees to the University, and after submission of the copies of the thesis for binding. Degrees are not granted *in absentia* unless specific written request is made to and permission is granted by the dean.

MASTER OF SCIENCE

1. Advanced graduate study leading to the Master of Science degree is offered in the Departments of Anatomy, Biochemistry and Molecular Biophysics, Biostatistics,

Human Genetics, including a track in genetic counseling, Medicinal Chemistry, Microbiology and Immunology, Pathology, Pharmacology and Toxicology, Pharmacy and Pharmaceutics, Physiology, and the Program in Biomedical Engineering, which includes a track in industrial hygiene.

2. A minimum of 24 semester hours is required, exclusive of research credits. In practice, it is found that two years of study usually are necessary to complete the requirements. A time limit of five calendar years, beginning at the time of first registration, is placed on work to be credited toward the Master of Science degree. Generally, a maximum of one third of the hours required for a master's degree may be transferred from another VCU program or outside institution and applied toward the degree upon recommendation of the student's advisory committee with concurrence by the chairman of the MCV Graduate Committee.
3. Each department, at its own discretion, may stipulate one foreign language requirement for the master's degree. It is strongly recommended that the student satisfy the foreign language requirement as soon as possible after beginning the program. Students must do so at least two months before submission of the thesis.
4. Each student conducts a research study under the guidance of his/her advisor. This study is reported in a thesis, prepared in acceptable form and style. On approval of the thesis by the advisor, the student submits a copy to each member of the advisory committee.
5. The thesis is examined by the student's advisory committee members, who shall decide upon its acceptability. The committee members may confer with one another before making their decision. Each committee member shall report to the dean of the School of Basic Health Sciences, through the student's advisor, when the thesis is acceptable for defense. The thesis is approved only if accepted unanimously.
6. On approval of the thesis, the student appears for a final oral examination administered by the student's advisory committee. The dean of the School of Basic Health Sciences, or an appointee, serves as

chairman of the examination committee. The final examination shall be open to the faculty, and its time and place (together with the candidate's name, department, and title of thesis) shall be announced at least ten working days in advance.

7. The final examination of an M.S. candidate includes the subject matter of course work as well as the thesis. A favorable vote, with no more than one negative vote, is required for the candidate to pass the examination. Only members of the student's advisory committee and the examiner appointed by the dean of the School of Basic Health Sciences shall vote. No examiner may abstain from voting. A thesis is not required for completion of the genetic counseling track in the Department of Human Genetics. In lieu of the thesis, students in the track are required to successfully pass comprehensive oral and written examinations.

DOCTOR OF PHILOSOPHY

1. Advanced graduate study leading to the Doctor of Philosophy degree is offered in the Departments of Anatomy, Biochemistry and Molecular Biophysics, Biostatistics, Human Genetics, Medicinal Chemistry, Microbiology and Immunology, Pathology, Pharmacology and Toxicology, Pharmacy and Pharmaceutics, and Physiology.
2. At least two years in residence are required for entering students holding the M.S., M.D., or D.D.S. degrees and at least three years for those entering with the baccalaureate degree only. A time limit of seven calendar years, beginning at the time of first registration, is placed on work to be credited towards the Doctor of Philosophy degree.

Admission to Candidacy

Before admission to candidacy for the doctorate, the student must have (1) completed required course work, (2) successfully completed the comprehensive examinations, and (3) fulfilled all additional departmental requirements. Students are admitted to candidacy by the dean of the School of Basic Health Sciences, upon recommendation of the advisors and advisory committees with the approval of the chairman of the major department.

Comprehensive Examinations

1. Upon satisfactory completion of all required, formal course work, the student takes written and oral comprehensive examinations. The written examination is administered by the student's major department. The student's advisory committee may require a minor field of study, in which case the student will also take a written comprehensive examination given by that department. In the event of failure in the written comprehensive examination in the major or minor department, the student, with the approval of the MCV Graduate Committee, may be permitted to repeat the written examination in the department in which the failure occurred.
2. After successfully passing the written examination(s), the student will take the oral portion within one month. This examination is conducted by the student's advisory committee. A favorable vote of the advisory committee with no more than one negative vote (all members being required to vote) shall be required to pass the oral portion of the comprehensive examination. The dean of the School of Basic Health Sciences or a faculty member representing the dean will chair the oral examinations and will cast a vote.
3. If a student passes the written comprehensive examination but fails the oral part, the student may be re-examined only in the oral part with the approval of the MCV Graduate Committee.
4. The oral comprehensive examination is open to all members of the faculty. Faculty members in attendance may ask questions of the candidate, but their questions shall not be presented until after the advisory committee has completed its questions. Faculty members other than those on the advisory committee shall not vote on the success or failure of the candidate. The time and place of the examinations shall be posted at least ten working days in advance.
5. The examination must be successfully completed at least six months before submission of the dissertation.

Dissertation Research

1. The student must conduct a substantial original investigation under the supervi-

sion of the advisor and prepare a dissertation reporting the results of this research and analyzing its significance in relation to existing scientific knowledge.

2. When the dissertation has been completed, copies in acceptable form and style are submitted to the members of the advisory committee. The committee members decide upon the acceptability of the candidate's thesis. A favorable unanimous vote is required to approve the dissertation, and all examiners are required to vote.
3. If the advisory committee accepts the dissertation for defense, the candidate appears before them for a final oral examination. This examination is open to all members of the faculty. The final oral examination will be limited to the subject of the candidate's dissertation and related matters. A favorable vote of the candidate's advisory committee and no more than one negative vote shall be required for passing the final oral examination. All committee members must vote. There shall be announcements of the candidate's name, department, and title of dissertation, together with the day, place, and hour of the final oral examination at least ten working days in advance.

NON-DEGREE SEEKING STUDENTS

Students not admitted to a degree program must obtain permission from the instructor before being allowed to register for courses in basic health sciences.

SUMMER REGISTRATION

Graduate students are expected to devote ten or more weeks during the summer to full-time research. Students registered for research credit are billed at the established tuition rate.

TRAINING AS A TEACHER

Currently, there is increased emphasis on competence as a teacher as well as investigator for faculty members of colleges, universities, and professional schools. In addition to practical experience, laboratory teaching, and lecturing, students should give consideration to courses offered by the School of Education concerning learning theory, instructional strategy, and

educational technology in adult education.

A complete listing of available courses in education in the University may be found in the *VCU Graduate Bulletin* or obtained from the School of Graduate Studies, Virginia Commonwealth University, Richmond, Virginia 23298-0568, (804) 786-0347.

COMBINED M.S./PH.D. AND M.D. OR D.D.S. DEGREE PROGRAMS

Many future physicians and dentists, especially those interested in academic and research careers, need to start in-depth training in research while still in school or in residency training. This need can be effectively met by completing the requirements for the M.S. or Ph.D. degree concurrently with the study of medicine or dentistry. The MCV/VCU medical and dental curricula, with free time for elective courses and research, provide an excellent opportunity for interested students to enter a combined M.S./M.D. or D.D.S. or Ph.D./M.D. or D.D.S. program.

Admission of students regularly enrolled in the Schools of Medicine and Dentistry to this combined degree program is processed through the Office of the Dean of the School of Basic Health Sciences by established procedures. The Medical College Admission Test or Dental Aptitude Test is accepted in lieu of the Graduate Record Examination. Undergraduate transcripts and references are obtained from the professional school. No application fee is required as the students are already regularly enrolled in a school of the University.

The requirements for a combined professional school/graduate school degree in basic sciences are equivalent to those required of students seeking a graduate degree alone and are determined by the individual department. One of the advisory committee members is the student's professional school advisor.

The minimum graduate residence requirement is one year for the M.S. and two years for the Ph.D. degree. Twenty-four weeks of graduate work (two summers) will be considered equivalent to one year of residence. A time limit of the five calendar years for the M.S. and seven calendar years for the Ph.D. degree, beginning at the time of first registration in the graduate school, applies to work to be credited toward degrees for students in combined programs.

INTERDISCIPLINARY Ph.D. PROGRAMS

The Schools of Basic Health Sciences and Allied Health Professions offer Ph.D. programs in neurophysiological physical therapy and in anatomy-orthopedic physical therapy. These research degrees are planned primarily as physical therapy faculty development programs; other needs may be met for individual students. Interested physical therapists should contact the Departments of Anatomy or Physiology for details.

The School of Pharmacy offers a combined Doctor of Pharmacy and Ph.D. program in the program in pharmaceuticals and pharmacy administration. Interested pharmacists should contact the program director in the School of Pharmacy for details.

DEPARTMENTAL RESEARCH INTERESTS

The course offerings and the list of faculty for each department offering course work are given in the appropriate school sections of this bulletin. The pages on which these may be found and brief statements of the research interests of the faculties of the departments follow:

School of Basic Health Sciences

1. Department of Anatomy page 103
Research Interests: morphological and functional studies of axonal reaction, cerebral blood flow, neurotransmitter imbalance, and protein synthesis following traumatic or ischemic brain injury; neurophysiology, transmitter neurochemistry, and neuroanatomy of eye movement; neural regeneration and myelination; CNS multisensory integration; ontogeny, aging, and cell biology of the immune system; immune system dysfunction and therapeutic approaches to treatment of brain malignancy; endothelial pathophysiology; neuroendocrinology and hypothalamic control mechanisms; ultrastructure, immunocytochemistry, and aging of the reproductive system.
2. Department of Biochemistry and Molecular Biophysics page 104
Research Interests: enzyme chemistry, cellular control mechanisms, protein structure and function, macromolecular structure, genetic control of development and differentiation, complex carbohydrate biochemistry, nuclear proteins, mechanism of hormone action, neurochemistry, intracellular protein catabolism, protein and nucleic acid metabolism and processing, membrane structure and function, cell surface receptors, eucaryotic molecular genetics, spectroscopy, X-ray crystallography, and other aspects of physical biochemistry.
3. Program in Biomedical Engineering page 105
Research Interests: cardiopulmonary responses to exercise,

biomedical instrumentation, signal processing, retinal injury due to low-level nonionizing sources, orthopedic and structural biomechanics, biomaterials and biocompatibility, cardiovascular hemodynamics, noninvasive diagnostics, mathematical modeling.

4. Department of Biostatistics page 107
Research Interests: response surface applications to cancer treatment, correlation analysis, sequential analysis, multivariate analysis, statistical analysis of toxicology studies, multidimensional scaling, linear models, categorical data analysis, statistical analysis of clinical trials, epidemiological and demographic research, application of Bayesian statistics to the medical sciences, robust statistics, stochastic model in time series analysis, statistical computing.
5. Curriculum in Industrial Hygiene page 106
Research Interests: biological monitoring, dermal absorption of toxicants, occupational and environmental health, radiation health, trace-metal metabolism, water contaminants, biohazards.
6. Department of Human Genetics page 108
Research Interests: human cytogenetics and somatic cell genetics, biochemical and molecular genetics, human population, quantitative and behavior genetics, clinical genetics including studies of counseling, twins, metabolic and neurosensory disorders, genetic counseling.
7. Department of Microbiology and Immunology page 109
Research Interests: microbial biochemistry, ecology, genetics and physiology, molecular biology, biophysical characterization of biological macromolecules, genetic mechanisms and regulation in prokaryotic and eukaryotic cells, biologic transport, cellular differentiation, immunobiology, immunotoxicology, immunopotentialization, host-parasite interactions, animal virology, mycology, microbial pathogenesis, cellular and molecular parasitology, cellular oncology, cellular and tumor immunology, cancer chemotherapy, antibiotics and chemotherapy.
8. Department of Pharmacology and Toxicology page 111
Research Interests: analgesics, analytical toxicology, behavioral pharmacology and toxicology, cancer chemotherapy, carcinogenesis, cholinergic mechanisms, clinical pharmacology, DNA damage and repair mechanisms, drug abuse, drug interactions, endogenous opioids, hepatotoxicology, ion and drug transport, immunotoxicology and immunopharmacology, macrophage function, microsomal proteins, neuropharmacology, peptide and drug synthesis, phospholipids, prostaglandins, receptor mechanisms, reproductive toxicology, safety evaluation, secretory mechanisms, toxicokinetics.
9. Department of Physiology page 113
Research Interests: motor and sensory systems, behavior, endocrine regulation of reproduction and thyroid systems, gastrointestinal secretory systems, oxygen transport and delivery systems, topics in general physiology including mechanisms of solute transport in epithelial and synthetic membrane systems, excitation-contraction coupling in cardiac, skeletal, and smooth muscle, biological effects of nonionizing radiation, radiological, and environmental

health, physics of diagnostic radiology, radiation oncology, and nuclear medicine, tracer methodology, zonal centrifugation, electron spin resonance, spectroscopy, and advanced chromatography and electrophoresis, and mathematical modeling.

School of Medicine

Department of Pathology page 47

Research Interests: biochemical and clinical applications of enzyme and protein immobilization, clinical enzymology, techniques in clinical chemistry, membranes in the pathogenesis of muscular dystrophy, mechanism of complement activation, platelet aggregation studies, drug metabolism, mast cells, immune effector systems, cancer-induced DNA damage and repair, cancer induced by chemical and physical agents, pathobiology of neoplasms, oral carcinogenesis, mycoplasma-bacterial interactions, bacterial L-forms, immunohematology, immunotherapy of cancer, cerebral microcirculation, blood substitutes, leukemia, sickle cell disease, trace metal metabolism in tumors, drug distribution, diagnostic immunoassays, inflammation, fever, neurochemistry and ultrastructure of brain, infectious diseases, paleopathology, and diagnostic virology.

School of Pharmacy

1. Department of Medicinal Chemistry page 75

Research Interests: synthesis and biological evaluation of new compounds, determination of relationships between chemical structure and biological activity, studies on modes of drug action, theoretical studies on structure-activity relationships of drugs including the use of molecular orbital theory and molecular connectivity, rational design of new drugs, studies on drug metabolism; physical properties of macromolecules in solution. Drug classes under investigation include antineoplastics, hypocholesteremics, hypotensives, neurotransmitter antagonists, peptide antibiotics, psychotropic agents, urolithiasis inhibitors, and platelet aggregation inhibitors.

2. Department of Pharmacy and

Pharmaceutics page 76

Research Interests: clinical studies in drug and drug product development, bioavailability studies, factors governing release of drugs from solid dosage forms, micellar nature of drug solutions, inhalation aerosol product development, drug delivery by inhalation, drug-protein binding interactions, effects of saturated and competitive metabolism on pharmacokinetics, clinical pharmacokinetics in humans, use of individual pharmacokinetic parameters in optimizing dosage regimens, development of analytical methodology for drugs in biological fluids, design and management of pharmacy-related health service systems, and drug prescribing and utilization studies.

INTEGRATED CURRICULUM— SCHOOL OF MEDICINE

All basic health sciences departments are involved in teaching the integrated curriculum in the School of Medicine. Lectures, conferences, and laboratories are offered during the M-I year principally by the Departments of Anatomy, Biochemistry and Molecular Biophysics, Bio-

statistics, Human Genetics, and Physiology. Microbiology and pharmacology are taught mainly in the M-II year. In addition, the basic health sciences departments offer electives which are available to medical students throughout their curriculum but primarily in the fourth year.

COURSES OF INSTRUCTION

Department of Anatomy (ANA)

Professors: Jollie (Chairman); Astruc; Goldberg; Haar; Harris; Johnson; Leichnetz; Povlishock; Seibel; Spencer
Associate Professors: Craig; Jenkins (Neurosurgery); Krieg; McClung; Merchant; Owers; Sholley; Szakal
Assistant Professors: Bigbee; Ellison; Jackson; Matt (Obstetrics & Gynecology)¹; Meredith; Phillips (Neurosurgery)¹

301 Head and Neck Anatomy (Dental Hygiene). Semester course; 3 lecture and 4 laboratory hours. 5 credits. An overview of head and neck anatomy with emphasis on oral structures.

302 Microscopic Anatomy (Dental Hygiene). Semester course; 2 lecture hours and 2 laboratory hours. 3 credits. A lecture course in the microscopic anatomy of general body tissues and of the oral cavity.

401 Principles of Human Anatomy (Primarily for pharmacy students). Semester course; 3 lecture and 3 laboratory hours. 4.5 credits. The structure of the human body is surveyed by organ systems which are studied at several levels of organization. Emphasis is placed on basic concepts and their application to various body components.

403 Embryology (Physical Therapy). Semester course; 1 lecture hour. 1 credit. A study of the development of the form of the human body emphasizing structural and developmental relationships between the musculoskeletal and nervous systems.

501 Gross Anatomy (Dentistry). Semester course; 5.5 lecture and 8 laboratory hours. 9.5 credits. A systematic dissection and study of the human body with clinical correlation and emphasis on the head and neck.

502 Microscopic Anatomy (Dentistry). Semester course; 3 lecture and 6 laboratory hours. 6 credits. A study of the normal tissues and organs of the human body at the microscope level, with emphasis on the histological organization and development of the oral cavity.

503 Neuroanatomy (Dentistry). Semester course; 1.5 lecture hours. 1.5 credits. This course provides the student with a broad exposure to the field of neuroanatomy. The structure and connections of the brain and spinal cord are stressed to prepare the student for dealing with physiological, pharmacological, and clinical aspects presented in other courses.

609 Gross Anatomy. Semester course; 4 lecture and 10 laboratory hours. 9 credits. A dissection and macroscopic study of the human body with clinical correlations.

610 Neuroanatomy. Semester course; 4 lecture and 4 laboratory hours. 6 credits. An advanced study of the structure, connections, and functions of the central nervous

¹ Department in parentheses indicates primary appointment.

system. The laboratory sessions complement lecture presentations emphasizing light microscopic and ultrastructural neurohistology, gross and sectional anatomy of the brain, and tracing of functionally-related CNS connections, as well as exposing the student to current neuroscience literature.

611 Histology. Semester course; 3 lecture and 6 laboratory hours. 6 credits. A study of the basic light and electron microscopic structure of cells, tissues, and organs. Emphasis on correlating structure with function.

613 Advanced Studies in Anatomy. Semester course; 1–6 credits. An in-depth course in specific areas of anatomy, histology, gross anatomy, and neuroanatomy.

614 Cytology. Semester course; 2 lecture hours. 2 credits. An in-depth treatment of cell structure and the morphological techniques used to study the structure and function of cells.

616 Techniques in Electron Microscopy. Semester course; 1–5 hours. 1–5 credits. Teaches basic and advanced techniques and theories of ultramicrotomy and electron microscopy as related to transmission and scanning electron microscopy.

690 Anatomy Research Seminar. Semester course; 1 lecture hour. 1 credit. A course consisting of faculty and student-led seminars presenting current research in neurobiology, immunobiology, and reproductive biology.

691 Special Topics in Anatomy. Semester course; 1–4 credits. Lectures, seminars, tutorial sessions, and/or library research assignments in selected areas of advanced study not available in other graduate level anatomy courses, or as concentrated emphasis on a particular area of anatomical research.

697 Directed Research in Anatomy. 1–15 credits. Research leading to the M.S. or Ph.D. degree and elective research projects for other students.

Department of Biochemistry and Molecular Biophysics (BIC)

Professors: Yu (Chairman); Banks; Brandt; Collins; DeVries; Franson; Grogan; Guzelian (Medicine)¹; Hawkrige (Chemistry)¹; Higgins; Liberti; Maggio; Rogers; Schirch; Scott (Medicine)¹; Shelton

Affiliate Professors: Bond; Martinez-Carrion

Associate Professors: Ariga; Chlebowsky; Cochran (Periodontics)¹; Diegelmann (Surgery)¹; Evans; Peterson; Van Tuyle; Wright, C.; Wright, H.; Zehner

Affiliate Associate Professors: Beynon; Gonzales-Ros; Poduslo

Assistant Professors: Carter; Harris; Newman; Saito

Affiliate Assistant Professors: Dominey; Iriarte

Instructors: Knight; Scarsdale

402 Biochemistry (Pharmacy). Semester course; 4 lecture and 3 laboratory hours. 5 credits. Prerequisite: CHE 301–302 or equivalent. A presentation of structural biochemistry, intermediary metabolism, physiological chemistry, and nutrition as a part of the fundamental background of modern pharmacy.

403 Biochemistry (Undergraduate). Semester course; 3 lecture hours. 3 credits. Prerequisites: CHE 301–302 or equivalents with permission of instructor. A presentation of structural biochemistry, enzymology, biophysical tech-

niques, bioenergetics, and an introduction to intermediary metabolism.

404 Biochemistry (Undergraduate). Semester course; 3 lecture hours. 3 credits. Prerequisites: CHE 301–302 or equivalents with permission of instructor. A presentation of intermediary metabolism, regulation, molecular genetics, biochemistry of nutrition, and selected topics of physiological/medical significance.

501 Biochemistry (Dentistry). Semester course; 4 lecture hours plus clinical correlations. 5 credits. Prerequisites: organic chemistry, three credits of physical chemistry, or permission of instructor. A presentation of structural biochemistry, intermediary metabolism, physiological chemistry, and nutrition as part of the fundamental background of modern dentistry. Four clinical correlation workshops complement the lecture presentations.

502 Biochemistry (Medicine). Semester course; 3 lecture hours. 3 credits. An introduction of structural biochemistry, intermediary metabolism, cell biology, and methods of biochemical analysis as part of the fundamental background of modern medicine.

503–504/MIC 503–504 Biochemistry, Cell and Molecular Biology. Continuous course; 5 lecture hours. 5 credits. Prerequisites: undergraduate organic and physical chemistry or permission of the instructor. A comprehensive introductory course that describes basic biochemistry and reviews current concepts of modern cell and molecular biology.

505–506 Experimental Biochemistry. Continuous course; 4 laboratory hours. 2 credits. Prerequisite or concurrent: BIC 503 or equivalent. Laboratory work, including theory and practice of advanced biochemical research methods.

550 Basic Science Core Curriculum for Postgraduate Dental Students. Semester course; 3 lecture hours. 3 credits. This course is designed to provide the postgraduate dental student with the educational experience in the basic science required for the successful completion of his/her specialty training program. Selected lectures in the basic science areas related to dentistry are presented and are supplemented by assigned articles.

601 Membranes and Lipids. Semester course; 3 lecture hours. 3 credits. (Alt. yrs. spring '91.) Prerequisite: BIC 503–504. Comprehensive presentation of important areas in biological membrane research. Key topics include techniques in the study of membrane lipids and proteins, "order" and organization in membranes, transport, receptors and cell surface antigens, physical measurements in membranes, and reconstituted systems.

602 Physical Properties of Macromolecules. Semester course; 3 lecture hours. 3 credits. Prerequisites: BIC 503–504 and physical chemistry. Physicochemical approaches to the determination of the structure and conformation of macromolecules.

603 Bioorganic Chemistry. Semester course; 3 lecture hours. 3 credits. Prerequisite: permission of instructor. Study of structure, chemistry, and mechanism of small biologically important molecules.

604 Enzymology. Semester course; 3 lecture hours. 3 credits. Prerequisite: BIC 503–504. Physical and chemical properties and mechanisms of action of enzymes. Treatment of chemical catalysis, enzyme kinetics, and correlation of enzyme structure to mechanisms.

¹ Department in parentheses indicates primary appointment.

605 Molecular Biology. Semester course; 3 lecture hours. 3 credits. Prerequisite: undergraduate chemistry or biochemistry. Nucleic acid structure, genetic code, DNA replication, transcription, translation; structure and properties of self-assembling systems; viruses, ribosomes, and membranes.

606 Biochemical Control Processes. Semester course; 3 lecture hours. 3 credits. (Alt. yrs. spring '92.) Prerequisite: BIC 503–504 and permission of instructor. An advanced course on aspects of control mechanisms at the molecular level.

610 Current Trends in Biochemistry. Semester course; 2 lecture hours. 2 credits. Prerequisite: BIC 503–504. A study and literature review of common and complex biochemical substances using recent research methodology.

690 Biochemistry Research Seminar. Semester course; 1 credit. Reports on recent biochemical literature and research by students and staff.

691 Special Topics in Biochemistry. Semester course; 1–4 credits. Lectures, tutorial studies and/or special assignments in selected areas of advanced study not available in other courses or as part of research training.

697 Directed Research in Biochemistry. 1–15 credits. Research leading to the M.S. or Ph.D. degree and elective research projects for other students.

Program in Biomedical Engineering (BME)

Professors: Freer (Director) (Pharmacology and Toxicology)¹; Abraham (Medicinal Chemistry)¹; Cardea (Orthopedic Surgery)¹; Haas (Cooperative Graduate Engineering)¹; Harkins (Gerontology); Marmarou (Surgery)¹; Mikulecky (Physiology)¹

Associate Professors: Clarke; Fatouros (Radiation Physics)¹; Gowdy (Physics)¹; Keefe (Biostatistics)¹; Lutz (Surgery)¹; Moon (Dentistry); Ochs (Neurology)¹; Wright, T. (Biochemistry and Molecular Biophysics)¹

Assistant Professors: Fei; Semus; White

Instructor: Scarsdale (Biochemistry and Molecular Biophysics)¹

507 Biomedical Electronics and Instrumentation. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Analog and digital electronic fundamentals in biomedical applications.

509 Microcomputer Technology in the Biomedical Sciences. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Microcomputer applications to the acquisition and manipulation of data in the biomedical laboratory.

511 Fundamentals of Biomechanics. Semester course; 3 lecture hours. 3 credits. Prerequisites: calculus and ordinary differential equations (MAT 200–201, MAT 301, or equivalent). Presents basic properties of materials, describes methods of material testing, and introduces techniques for analyzing the solid and fluid mechanics of the body. Considers topics such as stress/strain relationships, particle mechanics, and force balances as well as viscous/inviscid flow, Bernoulli's Law, Poiseuille flow, and laminar/turbulent states.

603 Biomedical Signal Processing. Semester course; 3 lecture hours. 3 credits. Prerequisites: calculus and differ-

ential equations (MAT 301 or equivalent), including Laplace and Fourier Transforms. Explores theory and application of discrete-time signal processing techniques in biomedical data processing. Includes discrete-time signals and systems, the Discrete/Fast Fourier Transforms (DFT/FFT), digital filter design and implementation, and an introduction into processing of discrete-time random signals.

610 Microprocessor Interfacing to Biomedical Instrumentation. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: BME 509 or permission of instructor. Principles and applications of microprocessor interfacing for biomedical instrumentation. Topics include: microprocessor architecture, assembly language, programming and debuting techniques, EPROM programming, and bus structure and interfacing.

611 Cardiovascular Dynamics. Semester course; 3 lecture hours. 3 credits. Pre- or corequisite: PIO 502 or 505. Analyzes and models the cardiovascular system in health and disease through studies on the properties of heart and vascular tissue, the mechanics of blood flow, and the application of engineering methods to the diagnosis and treatment of clinical abnormalities.

612 Structural Biomechanics. Semester course; 3 lecture hours. 3 credits. Prerequisite: BME 511. Treats mechanical functions of the human body as an engineering structure and discusses the devices used to assist and supplement these functions. Includes movement of the musculoskeletal system, joint reaction forces, stresses and strains developed within bones, function and design of orthopedic prostheses and braces, effect of vibration and impact on the body, mathematical and other models of the body.

613 Biomaterials. Semester course; 3 lecture hours. 3 credits. Prerequisite: undergraduate material science or permission of instructor. Considers primary and secondary factors determining the performance of materials used for implants in the human body. Includes topics on metallurgy of stainless steel, cobalt-chromium alloys, titanium alloys, biocompatibility of implant materials, mechanical and physical properties of biomaterials, corrosion of biomaterials, and medical polymers.

622 Circuit Design and Analysis. Semester course; 3 lecture hours. 3 credits. (Alt. yrs. spring '91.) Prerequisites: college physics, calculus. Emphasis is placed on the in-depth understanding of the analysis and design of electronic circuits. Designed to meet the needs of quantitatively oriented students.

635 Modeling for Biomedical Engineers. Semester course; 3 lecture hours. 3 credits. Prerequisite: permission of instructor. Applies mathematical modeling techniques to biomedical systems. Covers linear and nonlinear systems, deterministic and random systems, large systems, ecosystems, numerical techniques, graph theoretical approaches, and simulation packages. Utilizes examples of biochemical, physiological, and pharmacokinetic systems throughout.

680–681 Research Orientation. Semester course; 4 laboratory hours. 2 credits (nondidactic course) per semester. Research rotation through BME core and selected affiliate laboratories.

690 Biomedical Engineering Research Seminar. Semester course; 1 lecture hour. 1 credit. Presentation and discussion of research reports and topics of current interest to the program seminar or special group seminar.

¹ Department in parentheses indicates primary appointment.

691 Special Topics in Biomedical Engineering. Semester course; 1–4 credits. Lectures, tutorial studies, library assignments in selected areas of advance study, or specialized laboratory procedures not available in other courses or as part of the research training.

697 Directed Research in Biomedical Engineering. 1–15 credits. Research leading to the M.S. degree or elective research projects for other students.

Graduate Curriculum in Industrial Hygiene (INH)

Professors: Borzelleca (Pharmacology and Toxicology)¹; Cleary (Physiology)¹; Kilpatrick (Biostatistics)¹; Ottenbrite (Chemistry)¹; Vance (Preventive Medicine)¹.

Associate Professors: Pierce (Director); Anderson (Preventive Medicine)¹; Broga (Environmental Health and Safety)¹; Clarke (Biomedical Engineering)¹

Affiliate Associate Professor: Gulevich

Affiliate Assistant Professors: Keene; Sterling

Affiliate Lecturers: Benton; Calpin; Lowman; Pouliot; Wilson

504 Radiation Safety. Semester course; 1 lecture hour. 1 credit. Provides a basic background in radiation safety as applied in biological research. Includes radioactivity, decay types, radiobiology, detectors, dosimetry, rules of practice, regulatory requirements, and emergency procedures. Meets minimum requirements for approval as a Responsible Investigator with radionuclides.

511–512 Basic Industrial Hygiene. Semester course; 3 lecture hours, 3 credits. Basic concepts including; epidemiology, industrial toxicology, biological monitoring, dermatosis, sampling strategy, solvents, particulates, respiratory protection, ventilation, sound, heat stress, radiation, ergonomics, special topics, and the regulatory aspects.

521 Law and Regulation of Toxic Substances. Semester course; 3 lecture hours. 3 credits. Fundamental concepts in environmental, occupational health, and toxic tort law, including common law recovery of money damages, will be covered. The major federal statutes governing the regulation of toxic substances will be examined in detail: the Clean Air and Water Acts, TSCA, OSHA, RCRA, FIFRA, SDWA, CERCLA/Superfund, Atomic Energy Act, Food, Drug, and Cosmetics Act, and related statutes and regulations.

523 Introductory Radiation Biophysics. Semester course; 5 lecture and 10 laboratory hours. 4 credits. S. This introductory course exposes the student to the basic physics behind the entire spectrum of radiation producing and radiation measuring equipment used in clinical medicine. Equipment discussed includes X-ray tubes, image intensifiers, intensifying screens, X-ray films, radionuclide teletherapy units, computerized emission and transmission scanners, etc. Radiation safety features involved in their design and use are also considered. Each session consists of a brief introductory lecture followed by an extensive laboratory. Each topic involves a one-hour lecture and two-hour laboratory, five days a week for six weeks during the summer semester.

524 Physics of Diagnostic Radiology. 3 lecture and 2 laboratory hours. 4 credits. I, II. Covers in depth the physical

principles behind the use of radiation for medical diagnostic and therapeutic purposes. Topics covered include image-forming devices, analysis and optimization of image quality, linear accelerators, betatrons, and sealed sources of ionizing radiation. Radiation dose measurement and treatment planning techniques are also considered. Each topic is developed with lecture and laboratory components in each semester.

541 Principles of Waste Management. Semester course; 3 lecture hours. 3 credits. Design and operation of waste treatment, storage, disposal, and control processes will be covered. Design of tanks, landfills, and incinerators will be discussed in detail. Data acquisition and interpretation methods needed for process control and monitoring will be examined.

582 Non-ionizing Radiation Bioeffects. Semester course; 2 lecture hours. 2 credits. Designed to provide background in and understanding of the biological effects of non-ionizing radiation, with specific focus on health related issues. Physical characteristics of non-ionizing radiation, including visible light, infrared, microwave, radiofrequency, and lower frequency electromagnetic radiation, are reviewed and related to interactions with living systems. The development of safety standards also will be considered.

583 Industrial Ventilation. Semester course; 3 lecture hours. 3 credits. Principles of design and evaluation of local exhaust systems. Principles of air flow, characteristics of pressure losses, air movement, and selection of air cleaners.

601 Health Physics. Semester course; 3 lecture hours. 3 credits. Theoretical foundation and practical application of health physics as applied to diagnostic radiology, nuclear medicine, and radiation therapy. Regulatory and scientific aspects of the subject are covered. Mathematical models and physical principles of radioactive decay and radiation interactions are used to assess the relative values of different radiation safety practices.

625 Irradiated Biological Systems. Semester course; 3 lecture hours. 3 credits. An advanced-level course designed to provide information about the structure, properties, and biological activity of a class of agents that are mutagenic, carcinogenic, and lethal. These include ionizing and non-ionizing radiation, chemical mutagens, and clastogens (chromosome breaking). The significant physics and significant chemistry will be examined. The biological responses will be considered in detail. Biological damage, repair of damage, and the expression of unrepaired and misrepaired damage will be presented in systems spanning isolated biological material, cell organelles, procaryotes, and *in vivo* human responses. Consideration will also be given to cell survival, in critical target, repair processes, chromosomal and other genetic events, physiological phenomena, development effects, immune system alterations, carcinogenesis, medical uses and ecology.

690 Occupation and Environmental Health Research Seminar. Semester course; 1 lecture hour. 1 credit. Presentation and discussion of research reports and topics of current interest to the program seminar or special group seminar.

691 Special Topics in Occupation and Environmental Health. Semester course; 1–4 credits. Lectures, tutorial studies, library assignments in selected areas of advanced study, or special laboratory procedures not available in other courses or as part of the research training.

¹Department in parentheses indicates primary appointment.

697 Directed Research in Occupation and Environmental Health. Semester course; 1–15 credits. Research leading to the M.S. degree or elective research projects for other students.

Department of Biostatistics (BIS)

Professors: Carter (Chairman); Carithers (Internal Medicine)¹; Choi; Kilpatrick

Associate Professors: Bauer (Mathematical Sciences)¹; Chinchilli; Hamer (Psychiatry)¹; Henry (Sociology/Anthropology)¹; Keefe; McLish

Affiliate Associate Professors: Flora; Peace

Assistant Professors: Best (Periodontics)¹; Elswick; Gennings; Johnson (Mathematical Sciences)¹; Ko (Biomedical Engineering)¹; Nayfield (Medicine)¹; Staniswallis; White

Instructors: Boyle; Campbell

502 Application of Microcomputers to Health Sciences. Semester course; 1 lecture and 4 laboratory hours. 3 credits. Prerequisite: permission of instructor. This course will introduce the various uses of microcomputers in health sciences. BASIC language and application systems such as data bases, word processing, and statistical programs as related to health science problems will be taught. Students will also be instructed in the use of the Digital Equipment Company VAX computer which is located in the Academic Computer Center on the MCV Campus.

513–514/STA 513–514 Mathematical Statistics. Semester course; 3 lecture hours. 3 credits. Prerequisite: MAT 307 Multivariate Calculus. Probability, random variables and their properties, distributions, conditional distributions, moment generating functions, limit theorems; Neyman-Pearson and likelihood ratio criteria for testing hypotheses.

516 Biostatistical Consulting. Semester course; 1 lecture hour. 1 credit. The principles dealing with the basic art and concepts of consulting in biostatistics. The nonstatistical course discusses role, responsibilities of biostatisticians, relationship between clients and consultants, method of writing reports, etc.

521 Biostatistical Principles of Health Care Information. Semester course; 3 lecture hours. 3 credits. A basic introduction to the nature, use, and analysis of hospital and health-care statistics. The collection, presentation, tabulation, and interpretation of statistical data. Classification of measurements and observations, properties of rates, ratios, and indices. Some typical statistical distributions. The use of measure of location and dispersion to describe a distribution. "Normal" variation and outliers. The elementary laws of probability. The concept of a sampling distribution, the standard error of the mean and confidence limits in large and small samples, and tests of significance.

523/STA 523 Nonparametric Statistical Methods. Semester course; 3 lecture hours. 3 credits. Prerequisite: any two courses of statistics or permission of instructor. Estimation and hypothesis testing when the form of the underlying distribution is unknown. One-, two-, and k-sample problems. Tests of randomness, Kolmogorov-Smirnov tests, analysis of contingency tables, and coefficients of association.

524 Biostatistical Computing. Semester course; 3 lecture hours. 3 credits. The Statistical Analysis System (SAS) is both a powerful computer language and a large collection of statistical procedures. Students will learn how to create and manage computer data files. Techniques for thorough examination and validation of research data will be presented as the initial step of a complete, computerized analysis. Descriptive statistics will be computed and statistical procedures such as t-tests, contingency tables, correlation, regression, and analysis of variance then applied to the data. Special attention will be paid to the applicability of each procedure. Students will be encouraged to analyze their own or typical data from their disciplines.

530(S) Elements of Biometry. Semester course; 5 lecture hours weekly during July. 2 credits. (For dental and medical fellows; graduate students with consent.) Concepts of biostatistics and epidemiology. Summary statistics and tables. Normal distribution and statistical association. Chi-square tests, t-tests, Wilcoxon test, and other tests. Sensitivity, specificity, odds ratios, and related topics. Clinical trials, prospective and retrospective studies, and other miscellaneous topics in biostatistics and epidemiology.

543–544/STA 543–544 Statistical Methods. Semester course; 3 lecture hours. 3 credits. Prerequisite: graduate status or one course in statistics with permission of instructor. Basic concepts of statistical methods, statistical measures, variation, distributions, tests of significance, analysis of variance, correlation and regression; analysis and design of factorial experiments; analysis of covariance.

546 Linear Models. Semester course; 3 lecture hours. 3 credits. Prerequisites: BIS 513, 543. Distribution of quadratic forms under normal theory; general linear model of full rank and less than full rank, Gauss-Markov theorem; estimability.

553–554 Applied Statistics. Semester course; 3 lecture hours. 3 credits. Prerequisites: MAT 200–201 or equivalent and one previous course in statistics and permission of instructor. Introduces applied statistics of biostatistics intended primarily for graduate students in the Department of Biostatistics. Reviews elementary probability theory and frequency distributions, sampling theory, principles of inference, one and two sample problems. ANOVA. Principles of experimental design. Variance components. Multiple comparison procedures. Block designs and Latin Squares. Nested ANOVA. Multiway ANOVA. Correlation and regression analysis. Multiple regression. Nonlinear regression. ANCOVA. MANOVA. Repeated measures.

571 Clinical Trials. Semester course; 3 lecture hours. 3 credits. Concepts of data management, and statistical design and analysis in single-center and multi-center clinical trials. Data management topics include the collection, edition, and validation of data. Statistical design topics include randomization, stratification, blinding, placebo- and active-control groups, parallel and crossover designs, and power and sample size calculations. Statistical analysis topics include sequential and group sequential methods.

572 Statistical Analysis of Biomedical Data. Semester course; 3 lecture hours. 3 credits. Statistical methodology for data sets frequently encountered in biomedical experiments. Topics include analysis of rates and proportions, epidemiological indices, frequency data, contingency tables, logistic regression, life-tables, and survival analysis.

¹ Department in parentheses indicates primary appointment.

581 Applied Multivariate Analysis. Semester course; (Spring.) 3 lecture hours. 3 credits. Prerequisites: BIS 543–544 or BIS 553–554. Focuses on multivariate statistical methods including Hotelling's T-square, MANOVA, multivariate multiple regression, canonical correlation, discriminant analysis, partially and blocking, multivariate outliers, components and factor analysis, and GMANOVA. Presumes the material in BIS 543–544 or BIS 553–554, including a matrix approach to multiple regression.

615–616 Advanced Inference. Semester course; 4 lecture hours. 4 credits. Prerequisites: BIS 514 and MAT 508, or permission of instructor. Mathematical preliminaries: probability and measure, integration, modes of convergence. Decision theoretical approach to statistical inference, decision rules, admissibility. Bayes and minimax procedures, invariance, complete classes. Point estimation; unbiasedness; efficiency; M, L, and R estimators; U statistics; Hypothesis testing: the Neyman-Pearson theory, unbiased and invariant tests, conditional tests, permutation tests, rank tests, likelihood-based tests. Interval estimation: confidence sets, relationship between confidence sets and families of tests, unbiased and invariant confidence sets. Asymptotics: stochastic convergence, statistical limit theorems, ARE; asymptotic likelihood-based procedures. Overview of robust statistical procedures.

625 Analysis of Categorical Data. Semester course; 4 lecture hours. 4 credits. (Alt. yrs. '91–'92.) Prerequisites: BIS 514, 544, 572. Introduction to the theory and methods of analysis for binomial and multinomial data. Topics include exact and asymptotic analysis of contingency tables; measures of association and agreement; modelling approaches including logistic regression, loglinear models, and weighted least squares; methods for ordinal responses.

631–632 Multivariate Analysis. Semester course; 3 lecture hours. 3 credits. (Alt. yrs. '92–'93.) Prerequisites: BIS 514, 544, and 546. Introduction to the theory and methods of multivariate analysis; distributions; partial, multiple, and economical correlations; maximum likelihood and decision theoretical estimation; one- and two-sample tests; invariance: MANOVA, MANCOVA, GMANOVA, and multiple design models, nonparametric methods; inference with covariance matrices; principal components; factor analysis; discriminant analysis; clustering; multi-dimensional scaling.

638–639 Statistical Design and Analysis in Toxicology. Semester course; 3 lecture hours. 3 credits. (Alt. yrs. '92–'93.) Prerequisites for BIS students: BIS 514, 544. Prerequisite for non-BIS students (who can enroll on a P/F basis): BIS 544. Classical bioassay; dose-response relationships, continuous and quantal data; probit and logit analysis, estimation of the ED₅₀; combination experiments; low dose extrapolation and risk assessment; carcinogenicity, mutagenicity, and teratogenicity screening; overview of laboratory and experimental problems for the toxicologist.

647 Survival Analysis. Semester course; 3 lecture hours. 3 credits. (Alt. yrs. spring '91.) Prerequisites: BIS 514, 544. The analysis of survival (or failure time) data, with/without censoring. Actuarial and life-table methods, nonparametric and parametric estimation of survival functions, and comparison of survival curves; regression methods, such as the Cox proportional hazards model; competing risks; sequential models; applications to clinical trials.

650 Design and Analysis of Response Surface Experiments. Semester course; 3 lecture hours. 3 credits. (Alt. yrs.

fall '91.) Prerequisites: BIS 544, 546. Philosophy, terminology, and nomenclature for response surface methodology, analysis in the vicinity of the stationary point, canonical analyses, description of the response surfaces, rotability, uniform information designs, central composite in design, and modern design criteria.

655 Quantitative Epidemiology. Semester course; 3 lecture hours. 3 credits. II. (Alt. yrs. '91–'92.) Prerequisites: BIS 544, BIS 572. Examines the quantitative aspects of epidemiological research. Includes causality in epidemiological research; the design, analysis, and interpretation of cohort and case-control studies; bias, confounding, and misclassification; matching, stratification, and adjusting of covariates; generalized linear models in epidemiological research, goodness-of-fit tests, and goodness-of-link tests.

660 Sequential Analysis. Semester course; 3 lecture hours. 3 credits. (Alt. yrs. spring '91.) Prerequisites: BIS 514 and 544. Sequential methods versus fixed sample methods, the sequential probability ratio test with extensions and modifications, some applications of Cox's theorem, closed and truncated tests, group sequential tests, decision theoretic approaches, sequential estimation, other topics in sequential analysis with emphasis in clinical trials.

667 Advanced Data Analysis. Semester course; 3 lecture hours. 3 credits. I. (Alt. yrs. '91–'92.) Prerequisites: BIS 514, 544. Explores recently developed data analysis techniques to find the main features and underlying structure of data. Includes robust methods, bootstrap, linear model diagnostics, cross validation, nonparametric regression, optimal transformation, ACE algorithm, projection pursuit regression.

690 Biostatistical Research Seminar. Semester course; 1 lecture hour. 1 credit. Talks by the students, faculty, and visitors describing recent research or reviewing topics of mutual interest.

691 Special Topics in Biostatistics. Lecture and laboratory hours by arrangement. 1–4 credits. The faculty (including visiting and adjunct professors) from time to time offer courses in newly developing areas of statistics and biometry. For information, contact the department secretary.

697 Directed Research in Biostatistics. Semester course; 1–15 credits. Research leading to the M.S. or Ph.D. degree and elective research projects for other students.

Department of Human Genetics (GEN)

Distinguished Professor: Eaves

Professors: Nance (Chairman); Brown, J.; Kendler (Psychiatry)¹; MacLean (Psychiatry)¹; Wolf; Young (Pediatrics)¹

Affiliate Professors: Black; Howard-Peebles; Schulman; Sprecher

Associate Professors: Chinnici (Biology)¹; Corey; Hewitt; Holmes (Microbiology and Immunology)¹; Redwine (Obstetrics/Gynecology)¹; Rizzo (Pediatrics)¹; Townsend

Assistant Professors: Bodurtha; Diehl (Psychiatry)¹; Jackson-Cook; Marazita; Mosteller; Neale; Spence; Stevens

501 Introduction to Human Genetics. Semester course; 3 lecture hours. 3 credits. An introductory course in the

¹Department in parentheses indicates primary appointment.

principles of inheritance with particular reference to genetic variation in man.

502 Advanced Human Genetics. Semester course; 2–6 lecture hours. 2–6 credits. Prerequisite: GEN 501 or equivalent. A comprehensive study of the principles of specific areas in human genetics. This course supplements GEN 501 and is offered specifically for graduate students majoring in human genetics.

511 Human Cytogenetics. Semester course; 3 lecture hours. 3 credits. Prerequisites: GEN 501 and 5021 and II. A seminar format is used to discuss the recent advances in cytogenetics. Student participation will be through classroom discussion and informal presentations taken from the literature. Clinical cases are used to illustrate the application of special diagnostic methodologies.

516 Population Genetics. Semester course; 3 lecture hours. 3 credits. Genetic and ecological factors affecting normal and abnormal variation within and between populations of organisms, especially man.

518 Methods in Human Population Genetics. Semester course; 3 lecture hours. 3 credits. I. Data analysis and discussion of methods including segregation analysis and linkage. Topics covered will include inbreeding, ascertainment, and genetic epidemiology.

525–526 Practice of Genetic Counseling. Continuous course; Fall, 3 lecture hours. 3 credits. Spring, 3 lecture hours plus fieldwork. 4 credits. Provides context for practice of genetic counseling through literature review and practical techniques. Places specific emphasis on pregnancy and childhood evaluation, interviewing techniques, social and ethical issues, including fieldwork in prenatal, general genetics and specialty clinics. Limited to genetic counseling students or by permission of instructor.

527–528 Medical Genetics. Continuous course; 3 lecture hours. 3 credits. Provides medical information and principles of human genetic disease with specific emphasis on the molecular basis of Mendelian disorders, disorders of sexual development, assessment of dysmorphic features, and the genetics of common diseases. Emphasizes the use of all available resource materials in genetics. Limited to genetic counseling students or by permission of the instructor.

531 Dental Genetics. Semester course; 1 lecture hour. 1 credit. The basis of inheritance and variation in man, including simple and complex modes of inheritance, the nature of mutations, human chromosomal aberrations, variation in proteins and antigens, genetic aspects of some syndromes, and birth defects.

600 Clinical Genetics. Semester course; 1 lecture and 4 laboratory hours. 3 credits. Prerequisite: GEN 501 or equivalent. Practical experience in the genetic counseling clinic and on ward rounds. Includes collection and analysis of family histories, genetic counseling, and introduction to genetic nosology.

603 Mathematical and Statistical Genetics. Semester course; 3 lecture hours. 3 credits. Prerequisite: BIS 543–544 or equivalent. Provides an introduction to the rudiments of theoretical and applied mathematical population genetics, including the segregation of genes in families, genetic linkage, and quantitative inheritance. Emphasizes the methods used in the analysis of genetic data.

614 Human Biochemical and Molecular Genetics. Semester course; 4 lecture hours. 4 credits. Prerequisites: BIC 503–

504, equivalent, or permission of instructor. Surveys the mechanisms and varieties of human gene mutations resulting in human genetic disease and emphasizes the different investigational disorders using current scientific literature.

617 Segregation and Linkage Analysis. Semester course; 3 lecture hours. 3 credits; every spring semester. Prerequisite: Introductory Biostatistics or permission of instructor. Introduces the theory and practice of segregation and linkage analysis as applied to human kinship data. Emphasizes the techniques for the detection, characterization, and mapping of single loci with large effects on phenotype.

618 Advanced Segregation and Linkage Analysis. Semester course; 3 lecture hours. 3 credits; fall semesters of even years. Prerequisite: GEN 617 or permission of instructor. Focuses on advanced topics related to segregation and linkage analysis. Presents alternatives to single major locus segregation patterns, advanced linkage analysis techniques such as multipoint mapping, and combined segregation and linkage analyses.

619 Quantitative Genetics. Semester course; 3 lecture hours. 3 credits. The effects of genes and environment on complex human traits with emphasis on: genetic architecture and evolution; non-genetic inheritance; mate selection; developmental change; sex-effects; genotype-environment interaction; revolving cause from effect; design of genetic studies, statistical methods and computer algorithms for genetic data analysis.

620 Principles of Human Behavioral Genetics. Semester course; 3 lecture hours. 3 credits. The theory of genetic and non-genetic transmission considered in relation to the design analysis and interpretation of studies to identify the principal genetic and environmental causes of behavioral variation. Included will be analysis of intelligence, personality, social attitudes, and psychiatric disorders.

690 Genetic Research Seminar. Semester course; 1 lecture hour. 1 credit. Selected topics in genetics presented by students and staff.

691 Special Topics in Genetics. Semester course; 1–4 credits. Lectures, tutorial studies, library assignments in selected areas of advanced study or specialized laboratory procedures not available in other courses or as part of the research training.

697 Directed Research in Genetics. 1–15 credits. Research leading to the M.S. or Ph.D. degree and elective research projects for other students.

Department of Microbiology and Immunology (MIC)

Professors: Macrina (Chairman); Adler (Medicine)¹; Archer (Medicine)¹; Bradley; Coleman; Conrad; Dalton (Pathology)¹; Duma (Medicine)¹; Hylemon; Madge (Pathology)¹; Markowitz (Medicine)¹; Regelson (Medicine)¹; Ruddy (Medicine)¹; Schenkein (Periodontics)¹; Schwartz (Medicine)¹; Shadomy, H. J.; Shadomy, S. (Medicine)¹; Tew

Affiliate Professors: Roberts; Tinnell

Associate Professors: Bear (Surgery)¹; Burns (Oral Pathology)¹; Cabral; Formica; Gates (Biology)¹; Hard (Pathology)¹; Holmes; Hsu; Jacobson (Medicine)¹; Koertge (Periodontics)¹; Loria; Marciano-Cabral; Mikkelsen

¹Department in parentheses indicates primary appointment.

(Radiation Oncology)¹; O'Neal; Peters (Biology)¹; Susskind (Surgery)¹; Westin (Medicine)¹; Wu (Biology)¹

Affiliate Associate Professors: Lambert; Miller

Assistant Professors: Buck; Christie; Cook (Surgery)¹; Huff; Lebman; McCoy; Monaco; Povirk (Pharmacology and Toxicology)¹; Rosenkrantz; Rowland (Periodontics)¹; Swerdlow (Medicine)¹; Weiss

Affiliate Assistant Professors: Carlson; Emery; Halua

365 Infection and Immunity (Dental Hygiene). Semester course; 2 lecture and 2 laboratory hours. 3 credits. I. A study of infectious diseases of man with emphasis on the distribution properties and roles of pathogenic microorganisms and the varied responses of the host. Principles of prevention, control, and chemotherapy of infectious diseases are major components of the course. Microbiological procedures that relate to nursing and dental hygiene practice are demonstrated, practiced, and evaluated in laboratory exercises and conferences.

401 Microbiology. Semester course; 3 lecture and 3 laboratory hours. 4.5 credits. Prerequisite: BIC 402 or equivalent. A study of the fundamental principles of microbiology with special emphasis on those aspects of the subject that are of importance in the control of the disease state. Offered in the School of Pharmacy and open primarily to pharmacy students in the junior year; others by permission of the instructor.

502 Microbial Biotechnology. Semester course; 3 lecture hours. 3 credits. Prerequisites: MIC 504 or equivalent. BIC 503 or equivalent. The application of basic principles to the solution of commercial problems. The course will cover the historical principles in biotransformations as related to primary and secondary metabolism, as well as recombinant DNA technology and monoclonal antibody production. The products to be considered include antibiotics, steroids, vitamins, organic acids, and solvents in addition to monoclonal antibodies and products resulting from the application of recombinant DNA technology.

503-504/BIC 503-504 Biochemistry, Cell and Molecular Biology. Semester course; 5 lecture hours. 5 credits. Prerequisite: undergraduate organic and physical chemistry or permission of instructor. A comprehensive survey of the cell and molecular biology of prokaryotic and eukaryotic cells.

506 Immunobiology. Semester course; 3 lecture hours. 5 credits. A survey of immunobiology as a total host response to foreign agents, covering the nature of antigens and antibodies, antigen-antibody reactions, immunocompetent cells, allergic reactions, tumor immunology, transplantation immunology, and immunogenetics.

506L Microbiology and Immunology Laboratory. 4 laboratory hours. 2 credits. A laboratory designed to provide students with practical experience, using basic microbiological and immunological techniques which may be applicable in research projects and in diagnostic laboratories.

508-509 Introduction to Microbiology and Immunology Research. Continuous course; 1 lecture and 4 laboratory hours. 3 credits. Prerequisite: permission of instructor. Introduction to all active research programs in microbiology and immunology. Presentations of research programs by investigators and rotation of students through faculty

laboratories to gain direct exposure to individual research projects. Required of all first-year graduate students.

512 Laboratory Safety. Semester course; 1 lecture hour. 1 credit. Describes health hazards commonly found in microbiology laboratories and appropriate safety precautions and responses. Includes hazards of working with bacteria, viruses, parasites, fungi, recombinant DNA procedures and regulations, and chemical, electrical, and fire hazards.

513 Infections and Immunity (Dentistry). Semester course; 3.5 lecture and 4 laboratory hours. 5.5 credits. A lecture and laboratory study of the disease-producing microorganisms of man with special emphasis on the roles of microorganisms in oral diseases and related topics that are of importance in dentistry.

515 Medical Microbiology I. Semester course; 3 lecture hours. 3 credits. An introductory microbiology course designed to correlate determinative bacteriology and mycology to human disease. Emphasis will be on the interaction of the human host and infecting agents at the cellular and molecular level.

516 Medical Microbiology II. Semester course; 3 lecture hours. 3 credits. A comprehensive introduction to the basic principles of animal virology and human parasitology. Interactions of the infecting agents and hosts will be stressed at the molecular and cellular level.

517 Molecular Genetics and Gene Expression. Semester course; 4 lecture hours. 4 credits. This course was designed as a broad survey of basic genetic concepts as they pertain to molecular genetics and as an introduction to current integrated approaches to the study of the genetic apparatus of cells. Both prokaryotic and eukaryotic cellular and viral systems will be discussed with regard to organization and expression of their genetic material.

551 Basic Science Core Curriculum for Postgraduate Dental Students. Semester course; 3 lecture hours. 3 credits. This course is designed to provide postgraduate dental students with the educational experience in the basic science required for the successful completion of their specialty training programs. Selected lectures in the basic science areas related to dentistry are presented and are supplemented by assigned articles.

604 Cell Physiology and Metabolism. Semester course; 3 lecture hours. 3 credits. Prerequisite: MIC 504. An advanced course on the physiology and metabolism of prokaryotic and eukaryotic cells with some emphasis on the regulation of cell functions. Lectures and class discussions will focus on current scientific literature including review articles and original research papers.

653 Advanced Molecular Genetics. Semester course; 3 lecture hours. 3 credits. Prerequisites: MIC 517 or equivalent or permission of instructor. An advanced course on the molecular mechanisms of gene regulation in prokaryotic and eukaryotic cells, with some emphasis on developmental control of gene expression, oncogenesis, and the molecular basis of antibody diversity. Lectures and class discussion will focus on current scientific literature, including original research papers and recent review articles.

685 Advanced Immunobiology. Semester course; 2 lecture hours. 2 credits. Lectures, seminars, and conferences on basic and clinical immunobiology. Topics have included

¹Department in parentheses indicates primary appointment.

tumor immunology, cell interactions in the immune response, genetics of the immune response, mechanisms of host-defense, and membrane receptors in immunology and neoplasia. Open primarily to residents, medical students, and graduate students with immunology backgrounds such as MIC 506.

690 Microbiology Research Seminar. Seminar course; 1 lecture hour. 1 credit. Presentation and discussion of research reports and topics of current interest to the department seminar or special group seminar.

691 Special Topics in Microbiology. Semester course; 1–4 credits. Lectures, tutorial studies, and/or library assignments in selected areas of advanced study not available in other courses or as part of the research training.

697 Directed Research in Microbiology. Semester course; 1–15 credits. Research leading to the M.S. or Ph.D. degree and elective research projects for other students.

Department of Pharmacology and Toxicology (PMC)

Professors: Harris (Chairman); Aceto; Balster; Blanke (Pathology)¹; Borzelleca; Bradley (Microbiology and Immunology)¹; Carter (Biostatistics)¹; DeLorenzo (Neurology)¹; Dewey; Ellis; Fallon (Medicine)¹; Freer; Glennon (Medicinal Chemistry); Goldman (Medicine)¹; Guzelian (Medicine)¹; Lamb, R. G.; Martin; May; Munson; Narasimhachari (Psychiatry)¹; Rosecrans; Wasserman (Medicine)¹

Affiliate Professors: Carchman, R.; Creveling; Hayes, A.; Jacobson; Laychock; Pitt; Putney; Razdan; Rubin; Tabakoff

Associate Professors: Abd-Elfattah (Surgery)¹; Bowe; Chinchilli (Biostatistics)¹; Egle; Gewirtz; Grant (Medicine)¹; Holsapple; Patrick; Poklis (Pathology)¹; Robinson; Westin (Medicine)¹; Wright, J. (Medicine)¹

Affiliate Associate Professors: Busey; Carchman, S.; Fagan; Hong; Scala; Tardiff; Ward

Assistant Professors: Abood; Compton; Fuchs; Kaminski; Kawabata; Knisely (Psychiatry)¹; Kramer; Mansbach; McCrady; Povirk; Stern; Welch; White (Biostatistics)¹; Woodward

Affiliate Assistant Professors: Brase; Charles; Franko; Kinoshita; Muthukumaraswamy; Proakis; Rees; Shopp; Smith; Uwaydah

Instructor: Hayes, B.

371 Pathophysiology and Pharmacology I. Continuous course; 4 lecture hours. 4 credits. This is a course, designed for medical record administration students, that integrates pathophysiology and pharmacology to give the student a sound understanding of these two medical sciences and their interrelationships. This course covers concepts and principles of pathophysiology and pharmacology; disease mechanisms and mechanisms of drug action; inflammation; infection; repair; cell growth and neoplasms; immunity; endocrine disorders; hematologic disorders; GI disorders; anti-infective, antineoplastics, autonomic drugs; GI drugs; drugs affecting the blood; immune mechanisms and endocrine drugs; and other relevant pharmacology.

372 Pathophysiology and Pharmacology II. Continuous course; 3 lecture hours. 3 credits. This course, designed to

provide medical record administration students with a sound knowledge of pathophysiology and pharmacology, integrates and correlates these medical sciences, covering cardiovascular, renal, respiratory, neurologic, musculoskeletal, GU and other pathophysiologic states; cardiovascular drugs; renal and central nervous system drugs; and respiratory and other relevant pharmacology. PMC 372 is a continuation of PMC 371.

400 Drugs and Their Actions. Semester course; 3 lecture hours. 3 credits. This is a survey course in pharmacology which includes all the major classes of drug action. Each class is discussed in relation to mechanism of drug action and therapeutic application. Open to all junior and senior undergraduate and special students.

401 Environmental Toxicology. Semester course; 3 lecture hours. 3 credits. An environmental health science survey course focusing on the source, ecology, chemistry, biodeposition, and toxicology of toxic chemicals in the biosphere with special emphasis on air, water, surface, and food contamination.

403 Principles of Pharmacology (Pharmacy). Semester course; 3 lecture and 2 laboratory hours. 4 credits. The basic principles of pharmacology and an in-depth consideration of the biodeposition and mechanisms of action of these agents. Drugs acting on the autonomic nervous system, chemotherapeutic agents, and endocrine agents are covered this semester.

404 Pharmacological Agents (Pharmacy). Semester course; 4 lecture hours. 4 credits. Includes drugs acting on the cardiovascular, gastrointestinal, and central nervous systems, anti-inflammatory agents, and principles of toxicology. (This is a continuation of PMC 403.)

413 Pharmacological and Clinical Correlations. Semester course; 3 lecture hours. 3 credits. Primarily for nursing students. This course integrates and correlates clinical experiences with the effect of drugs on biochemical, physiological, and pathological systems.

441 Pharmacology (Dental Hygiene). Semester course; 5 lecture hours. 5 credits. A didactic course designed to emphasize the principles of pharmacology and pain control and the rationale of drug actions, uses, and adverse effects.

448 Drug Dependence. Semester course; 3 lecture hours. 3 credits. Prerequisite: junior or senior standing, or permission of instructor. A broad survey course in problems of drug use and abuse intended primarily for students in the biomedical sciences, social sciences, or education. It will focus on the pharmacology of psycho-active drugs as well as a study of the psychological and sociological factors in drug-taking behavior, rehabilitation methods, and drug abuse prevention. This course may not be taken in lieu of any pharmacology offerings in the professional schools on the MCV Campus. For graduate credit see PMC 548.

515 Pharmacology for Nurse Anesthetists. Semester course; 3 lecture hours. 3 credits. The basic principles of pharmacology including mechanisms of absorption, distribution, biotransformation, elimination, dose-response relationships, drug receptor interactions are presented followed by a detailed discussion of autonomic, cardiovascular, and renal pharmacology as it relates to nurse anesthesia.

¹Department in parentheses indicates primary appointment.

516 Pharmacology for Nurse Anesthetists. Semester course; 3 lecture hours. 3 credits. A detailed presentation of the pharmacology of classes of drugs used by nurse anesthetists including agents with primary therapeutic effect on the brain and endocrine glands. General and regional anesthetics will be emphasized.

535 Principles of Toxicology. Semester course; 4 lecture hours. 4 credits. The basic principles of the various aspects of toxicology are presented. Correlations of functional, morphological, carcinogenic, mutagenic and reproductive responses with toxicological lesions (biochemical, cellular) are attempted. Environmental and industrial toxicology of food, water, and agricultural chemicals, pertinent legislation, and principles of forensic toxicology also are covered.

536 General Pharmacology. Semester course; 4.5 lecture hours. 4.5 credits. Prerequisites: PIO 501 and BIC 503 or permission of instructor. A comprehensive course in pharmacology for graduate students. The mechanisms of action of major classes of pharmacology active agents and basic principles of pharmacology are discussed. Topics discussed in the first half of the course include drug absorption, distribution, and metabolism; receptor theory; chemotherapy; and endocrine pharmacology.

537 General Pharmacology. Semester course; 4.5 lecture hours. 4.5 credits. (Continuation of PMC 536.) Topics covered in the second semester include autonomic, cardiovascular, and central nervous system pharmacology.

548 Drug Dependence. Semester course; 3 lecture hours. 3 credits. Prerequisite: graduate or post-baccalaureate standing. A broad survey course in problems of drug and alcohol use and abuse. It will focus on the pharmacology of abused drugs as well as a study of the psychological and sociological factors in drug-taking behavior, rehabilitation methods, and prevention. This course may not be taken in lieu of any pharmacology offerings in the professional schools on the MCV Campus.

597 Introduction to Pharmacological Research. 1-12 credits. Prerequisite: permission of instructor. Rotation research in pharmacology and toxicology laboratories for beginning graduate students.

609 General Pharmacology and Pain Control. Continuous course; 2 lecture hours per week for 2 semesters. One grade for 4 credits at end of 2nd semester. The basic principles of pharmacology, including mechanisms of absorption, distribution, biotransformation, elimination; dose-response relationships, drug-receptor interactions are presented followed by detailed discussion of the various classes of drugs, with special consideration given to mechanisms of action and untoward effects of drugs used in dentistry to control pain and related symptoms.

611 General Pharmacology and Pain Control. Semester course; 2 lecture and 1 laboratory hour. 2 credits. A continuation of PMC 609.

625 Biochemical Pharmacology. Semester course; 3 lecture hours. 3 credits. I. (Alt. yrs. fall '92.) Selected topics dealing with drug biodisposition and cellular sites of drug action.

632 Neurochemical Pharmacology. Semester course; 3 lecture hours. 3 credits. (Alt. yrs. spring '91.) The biochem-

ical and theoretical aspects of the effects of drugs on the central nervous system will be discussed.

633 Behavioral Pharmacology. Semester course; 3 lecture hours. 3 credits. (Alt. yrs. fall '91.) This is a survey course covering research on the effects of drugs on behavior. The major emphasis will be on schedule-controlled learned behavior. Additional topics include drug self-administration, drug discrimination, and conditioned drug effects and behavioral toxicology. The course focuses primarily on laboratory research in animals although human research will also be covered. The relevance of this research literature to drug treatment of behavioral disorders and substance abuse will be discussed.

637 Cardiovascular-Autonomic Pharmacology. Semester course; 3 lecture hours. 3 credits. (Alt. yrs. spring '92.) Specialized advanced course in the pharmacology of drugs which affect these systems.

638 Advanced Toxicology. Semester course; 3 lecture hours. 3 credits. (Alt. yrs. spring '91.) An holistic approach is taken to describe and analyze toxicological information. Intact animal, organ, cellular, and biochemical responses to toxic agents are presented. Immunologic, genetic, endocrine, and central nervous system paradigms and their relationship to the mechanism of action of toxic agents as well as the predictive value of tests of these systems are presented. Kinetics and metabolism of toxic agents as well as statistical and analytical procedures are integrated into the discussions.

639 Drug Development. Semester course; 1 lecture and 4 laboratory hours. 3 credits. (Alt. yrs. fall '92.) Prerequisites: PMC 536 and 537 or their equivalents. The principles of drug screening, advanced testing, and procedures necessary prior to the clinical evaluation of new products are described. An emphasis is placed on physiological type procedures used in pharmacology.

641 Pharmacology Review (Dentistry). Semester course; 1 lecture hour. 1 credit. A review in pharmacology for senior dental students.

642 Patients, Drugs, Diseases, and Dentists. Semester course; 1 lecture hour. 1 credit. Discussion of patients, their diseases, drugs used to treat these diseases, and how they relate to the practice of dentistry.

644 Forensic Toxicology. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Lecture and demonstrations in which common poisons and groups of poisons are discussed in relation to detection, diagnosis, and treatment of poisoning. Demonstrations include basic principles of analytical toxicology, forensic science, and courtroom testimony.

690 Pharmacology Research Seminar. Semester course; 1 lecture hour. 1 credit. Members of the departmental staff, students, and visiting lecturers participate in discussions on topics of current and historical interest.

691 Special Topics in Pharmacology. 1-4 credits. Prerequisite: permission of instructor. Special topics in pharmacology or toxicology covered in less detail in other courses will be studied in depth in this course.

697 Directed Research in Pharmacology. 1-15 credits. Research leading to the M.S. or Ph.D. degree and elective projects for other students.

Department of Physiology (PIO)

Distinguished Professor: Briggs

Professors: DeSimone (Chairman); Biber; Boadle-Biber; Cleary; Eckberg (Cardiology)¹; Fabiato; Hayes (Neurosurgery)¹; Hess (Medicine)¹; Kalimi; Marmarou (Neurosurgery)¹; Mayer; Mikulecky; Pittman; Price; Ridgway; Schoolwerth (Medicine)¹; Stein; Wechsler (Surgery)¹; Witorsch

Associate Professors: Baumgarten; Clarke (Biomedical Engineering)¹; Corley; Costanzo, L.; Costanzo, R.; Feher; Fine (Biology)¹; Ford; Poland; Price, D. (Anesthesiology)¹; Stewart (Biology)¹

Assistant Professors: Clemo; Drewnowska; Gervin (Surgery)¹; Grider; Heck; Liu; Lyall; McHaffie; Meirson; Morrison

461 Introduction to Human Physiology. Semester course; 3 lecture hours. 3 credits. Prerequisites: biology, general chemistry, and human anatomy. An introductory course to human physiology based on an analysis of organ systems.

482 Mammalian Physiology. Semester course; 4 lecture hours. 4 credits. A comprehensive study of the function of mammalian organ systems, designed primarily for pharmacy students.

501 Graduate Mammalian Physiology. Semester course; 5 lecture hours. 5 credits. Prerequisites: biology, chemistry, and physics. A comprehensive study of the function of mammalian organ systems, designed primarily for graduate students.

502 Mammalian Physiology. Semester course; 5 lecture hours. 5 credits. Prerequisite: same as for PIO 501. A comprehensive study of the function of mammalian organ systems, designed primarily for dental students.

505 Mammalian Physiology. Semester course; 3 lecture hours. 3 credits. A comprehensive study of the function of mammalian organ systems, designed primarily for graduate students in the Industrial Hygiene Curriculum.

604 Cell Physiology. Semester course; 4 lecture hours. 4 credits. A description of the functional properties of cells in terms of physics and chemistry. Topics discussed include cell structure and cytochemistry, bioenergetics, secretion, transport of material across membranes, excitation, and contractility.

605 Mathematical Physiology. Semester course; 3 lecture hours. 3 credits. The application of set theory to physiological problems. Physiological functions and mappings. Linear transformations. The use of complex numbers. Limits, derivatives, and integrals and their use in physiology. Rate processes. Physiological function and its dependence on many variables. Probabilistic ideas in physiology.

606 Physical Principles in Physiology. Semester course; 4 lecture hours. 4 credits. Prerequisite: PIO 605 or permission of instructor. A survey of those principles of physics and physical chemistry underlying physiological processes. Topics include energetics of equilibrium and nonequilibrium

systems, electrode processes, reaction-diffusion systems, kinetics, photochemistry, physical techniques in physiological research.

612 Cardiovascular Physiology. Semester course; 3 lecture hours. 3 credits. Prerequisite: permission of instructor. An in-depth study of the original literature in selected areas of cardiovascular physiology.

614 Membrane Transport. Semester course; 2 lecture hours. 2 credits. Advanced description of membrane transport processes.

615 Neurophysiology. Semester course; 3 lecture hours. 3 credits. Prerequisite: permission of instructor. An in-depth study of the original literature in selected areas of neurophysiology.

617 Endocrine Physiology. Semester course; 3 lecture hours. 3 credits. (Alt. yrs. '92-'93.) Prerequisites: courses in mammalian physiology and biochemistry, or permission of instructor. An in-depth study of the original literature in selected areas of endocrine physiology.

618 Renal and Epithelial Physiology. Semester course; 3 lecture hours. 3 credits. (Alt. yrs. '92-'93.) Prerequisite: permission of instructor. An in-depth study of selected areas of renal and epithelial physiology. Topics include mechanisms of salt and water transport in the nephron, urinary concentrating mechanisms, hormonal regulation of ion transport, role of the kidney in acid-base homeostasis, diuretics, ion transport in amphibian epithelia, water and solute transport in gastrointestinal epithelia and lingual epithelia.

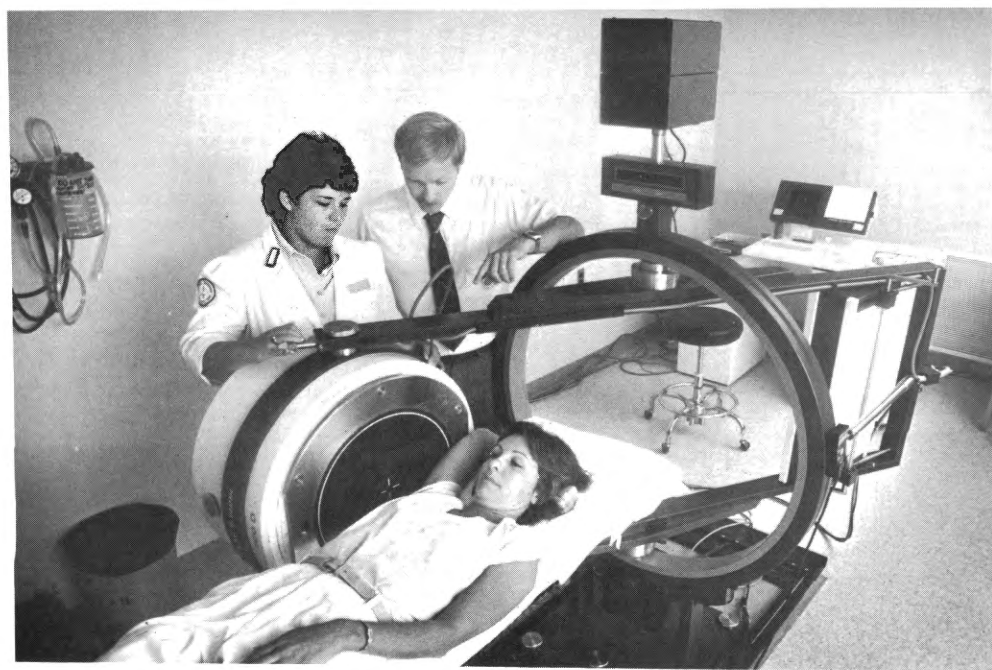
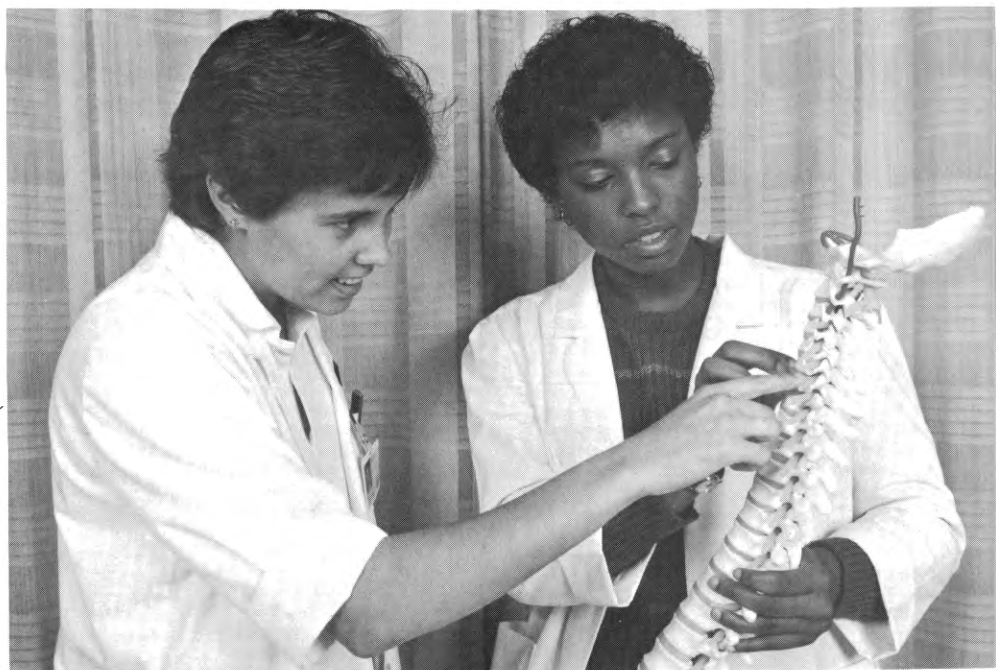
630 The Application of Network Thermodynamics to the Analysis and Computer Simulation of Life Processes. Semester course; 3 lecture hours and 4 laboratory hours. 5 credits. Prerequisite: consent of instructor. Network thermodynamics applied to organization in living systems. Relations between biological and electrical networks. Simulation of nonlinear, complex dynamic, pharmacological, and biochemical systems with applications to diffusion, blood flow, reaction kinetics, membrane transport (cellular and epithelia), endocrine effects, cellular and whole body pharmacokinetics, model design and verification, metabolic regulation and control, reaction-diffusion systems, morphogenesis, others.

690 Physiology Research Seminar. Semester course; 1 lecture hour. 1 credit. Reports on current physiological research and problems presented by graduate students, staff, and visiting lecturers.

691 Special Topics in Physiology. Semester course; 1-4 credits. Prerequisites: a 500-level physiology course or equivalent and permission of instructor. This course is designed to provide study of specific topics in physiology. The topics offered include cell physiology, neurophysiology, cardiopulmonary physiology, renal/gastrointestinal physiology, and endocrinology.

697 Directed Research in Physiology. 1-15 credits. Research leading to the M.S. or Ph.D. degree and elective research projects to other students.

¹ Department in parentheses indicates primary appointment.



PART VII — School of Allied Health Professions

THOMAS C. BARKER, Ph.D.

Dean

LARRIE I. DEAN, Ph.D.

Associate Dean

DEBRA A. ROPELEWSKI, M.B.A.

Assistant Dean for Fiscal Affairs

JENNIE D. SEATON, Ed.D.

Assistant Dean for Interdisciplinary and
Student Affairs

JAMES L. DUNN, M.S.

Director, External Affairs

The School of Allied Health Professions was established within the Medical College of Virginia of Virginia Commonwealth University on January 1, 1969.

A fundamental reason for the establishment of the School of Allied Health Professions was to provide an administrative structure for existing educational programs in allied health disciplines and to direct the development of new programs in response to the growing need for allied health manpower. At the outset, the school incorporated existing educational programs for hospital administration, medical technology, physical therapy, radiologic technology, and X-ray technicians. A program for nurse anesthesia was inaugurated as a separate department in 1969; an existing educational program in occupational therapy located on the Academic Campus was transferred administratively to the School of Allied Health Professions in 1970; also in 1970, a teaching program in patient counseling formerly based within MCV Hospitals was integrated with the school. Since 1974 baccalaureate programs in health care management, medical

record administration, and radiation sciences, with specific concentrations in education and in administration, have been established. A doctoral program in health services, organization, and research, the first for the School of Allied Health Professions, was introduced in 1982. In 1985 the existing Department of Gerontology was transferred administratively to the School of Allied Health Professions. In June 1988 an executive master's program in health administration was introduced. Also in 1988, the medical records administration program was renamed "health information management." An entry-level master's degree professional program in physical therapy was initiated for students matriculating in August 1989. The enlargement of selected programs and the development of future ones in health-related professions are anticipated.

PROGRAMS

Departments and programs currently in this school and the degrees or certificates conferred on their graduates are

DEPARTMENT OF GERONTOLOGY

Master of Science

Postgraduate Certificate in Aging Studies

Postgraduate Certificate in Aging Studies
and Master of Social Work—offered in
conjunction with the School of Social
Work.

DEPARTMENT OF HEALTH ADMINISTRATION

Bachelor of Science majoring in Health

- Care Management
- Bachelor of Science majoring in Health Information Management
- Master of Health Administration
- Master of Health Administration/Juris Doctorate—offered jointly with the T.C. Williams School of Law at the University of Richmond.
- Master of Science (Health Administration Executive Program)
- Doctor of Philosophy majoring in Health Services, Organization, and Research
- DEPARTMENT OF MEDICAL TECHNOLOGY**
 - Bachelor of Science majoring in Medical Technology
 - Master of Science
- DEPARTMENT OF NURSE ANESTHESIA**
 - Master of Science in Nurse Anesthesia
- DEPARTMENT OF OCCUPATIONAL THERAPY**
 - Bachelor of Science majoring in Occupational Therapy
 - Master of Science in Occupational Therapy
 - Master of Science
- PROGRAM OF PATIENT COUNSELING**
 - Postgraduate Certificate in Patient Counseling
- DEPARTMENT OF PHYSICAL THERAPY**
 - Master of Science
 - Doctor of Philosophy—Physical Therapy track offered in conjunction with the Departments of Anatomy and Physiology, School of Basic Health Sciences.
- DEPARTMENT OF RADIATION SCIENCES**
 - Associate in Science majoring in Radiologic Technology
 - Bachelor of Science majoring in Clinical Radiation Sciences

Detailed descriptions of all graduate programs may be found in the *Virginia Commonwealth University Graduate Bulletin*.

PHILOSOPHY

The faculty of the school is committed to offer, through the establishment and maintenance of rigorous standards of excellence, undergraduate and graduate education that will prepare students for professional careers in the several allied health disciplines. Development of professional

attitudes, emotional maturity, and ethical behavior are vital components of the educational process. It is essential that students gain a deep respect for the dignity of man and the inherent rights of patients and others who receive services. Programs are designed to include not only the development of skills to assure excellence in quality of health care, but also such factual knowledge and experiences that will provide the basis for continuing intellectual and professional growth.

Community services of the school and faculty include continuing education, consultative resources, and participation in all pertinent areas of health care. An integral part of these efforts is to stimulate and sponsor research activities in the allied health disciplines represented within the school and to encourage interdisciplinary research.

FACILITIES

Departments and programs in the School of Allied Health Professions are housed in the Egyptian Building, Randolph-Minor Annex, West Hospital Building, Newton House, Nursing Education Building, VMI Building, Lyons Building, Sheltering Arms Building, Samuel Putney House, Stephen Putney House, and McGuire Hall.

ACCREDITATION

Virginia Commonwealth University and its component schools are accredited by the Southern Association of Colleges and Schools, the general accrediting agency for colleges in the region. The School of Allied Health Professions is an institutional member of the American Society of Allied Health Professions and the Virginia Association of Allied Health Professions. All of its programs are approved or accredited by the appropriate national professional or educational organizations.

STUDENT PERFORMANCE AND BEHAVIOR

The goals and objectives of the School of Allied Health Professions and its component departments and programs relate to the education of persons preparing for professional careers in the allied health disciplines. An integral requisite of each student and practitioner is an undeviating acceptance of a professional attitude and pride that will motivate him/her to adhere to

a code of professional ethics and to develop fully the competencies for practice.

Thus, the suitability of student performance and behavior relating to these professions and to the consumers of health care is a paramount concern of the administration and faculty of this school. Standards of conduct are presented in Part I of this bulletin and relate to the students in the School of Allied Health Professions. To assure a quality of educational and clinical preparation for its graduates, the following statement is also promulgated:

"If, in the judgment of the Faculty/Administration of the School of Allied Health Professions, a student is not considered suitable for emotional, professional, or related reasons, the student's academic status may be appropriately altered."

If any questions arise regarding standards of performance or behavior, it is the responsibility of students to apprise themselves of acceptable character and conduct requirements prior to matriculation in the designated department or program.

ATTENDANCE REGULATIONS

The faculty considers attendance at lectures, laboratories, and other functions a requisite to the successful acquisition of the knowledge and skills required of the professional. The faculty cannot condone absence without good reason from any regularly scheduled educational experience. At the start of each course, the instructor will relate to the class the policy of his or her department concerning attendance regulations for that semester. The nature of make-up work in the event of absence will be the prerogative of the instructor.

GRADUATE PROGRAMS

Graduate degree offerings in the School of Allied Health Professions are designated as basic professional or advanced-level programs. Accreditation requirements for the individual programs preclude the establishment of general school admission prerequisites, registration dates, and course and degree requirements.

It is the intent that the regulations and procedures for each program ensure the selection of applicants whose motivation, ability, character, and health status qualify them to successfully pursue graduate study. Specific information may be found in the *Virginia Commonwealth Univer-*

sity Graduate Bulletin or is available from the departmental graduate coordinator.

COURSES OF INSTRUCTION (AHP)

Nearly all course offerings in the school are provided by departments and programs; however, selected courses considered applicable to many students in these programs have been assigned to the School of Allied Health Professions.

351 Learning Theory. Semester course; 3 lecture hours. 3 credits. Prerequisites: none. A study of the application of psychological principles to the teaching-learning process, with emphasis on practical applications.

391 Special Topics. Semester course; 1-4 credits. Prerequisite: permission of instructor. Interdisciplinary study through lectures, tutorial study, or independent research of selected topics not provided in other courses. Offered on undergraduate level.

401 Instructional Strategies. Semester course; 3 lecture hours. 3 credits. This course is designed to introduce the student to learning theory, instructional design, evaluation, and methodology. Emphasis will be placed on the study of applying principles and techniques of teaching in all areas of allied health education.

425 Economics of Health Care. Semester course; 4 credits. Examines topic of economics as it affects the field of health information management. Approaches broad economic and financial concepts as applied to policy-making in the health care industry. Emphasizes the budget process in health care institutions as it affects individual departments and how it requires accountability of each.

491 Issues in Allied Health Education. Semester course; 3 lecture hours. 3 credits. Prerequisites: none. A detailed study of three major components in allied health education: admissions, accreditation, and clinical relationships. The remainder of the course will be devoted to exploration of current issues identified by faculty and/or students, including those which arise during the student's education practicum.

582 Supervision in the Allied Health Professions. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Study of the supervisory process and staff development, training in communication and interpersonal skills, and public relations within the health facility.

591 Special Topics. Semester course; 1-4 credits. Prerequisite: permission of instructor. Interdisciplinary study through lectures, tutorial study, or independent research of selected topics not provided in other courses.

594 Health Education—Practicum. Section 01, General. Section 02, NUA. Section 03, MT. Semester course; 1 lecture and 4 laboratory hours. 1-6 credits. Prerequisite: AHP 573. Preparation, presentation, and evaluation of selected educational experiences in the appropriate undergraduate program.

596 Supervisory and Administrative Practicum in Allied Health Clinics. Semester course; 60 clock hours. 1-9 credits. Section 01 MT, Section 02 PT. Prerequisite: permission of

instructor. The course is designed for the student who will be assuming supervisory and administrative roles. Areas to be covered include clinical personnel management, budgeting and ordering of materials and equipment, consultation with physicians, developing and troubleshooting clinical methods, designing job descriptions, and implementation of quality control programs.

Courses offered by the School of Education on the Academic Campus are generally oriented to graduate students interested in teaching, administration, or supervision.

Department of Gerontology

HISTORY

The gerontology department was founded in 1976. The M.S. majoring in gerontology, and a postgraduate Certificate in Aging Studies are offered. The Department of Gerontology became a part of the School of Allied Health Professions in January 1985. As part of the department, the Geriatric Education Center was established October 1, 1985. This center is a multidisciplinary effort involving cooperation of all the health-related professional schools and the College of Humanities and Sciences; its major focus is to promote education in geriatrics and gerontological health care.

PHILOSOPHY

The basic philosophy of the department is to improve the overall well-being of elderly persons through the development of educational programs which are responsive to the changing psychological, physical, social, and political needs of the elderly population. Research, community service, and continuing education in gerontology and geriatrics are integral parts of this educational effort.

OBJECTIVES

The purposes of the program are three-fold: (1) to train qualified professionals to work in administrative, planning, service delivery, and instructional/staff development positions in programs and services for the elderly at the national, state, and local levels; (2) to provide an opportunity for those studying in other disciplines, and whose work will encompass service to the aged, to integrate their own training with a comprehensive knowledge and understanding of the aging process; and (3) to stimulate the design and execution of gerontological research across multiple disciplines.

FACILITIES

Offices of the gerontology department are located in the Putney Houses and Sheltering Arms Building. Laboratory facilities for psychophysiological and pain research are housed in the Stephen Putney House, and facilities for health and clinical psychology-related research are located in the Sheltering Arms Building.

PROGRAMS

Four courses of study are offered:

1. A Master of Science degree with a concentration in one of the following six areas: Education Track, Health Care Organization and Planning Track, Psychogeriatrics Track, Public Administration Track, Social Services Track, or a Research Track.
2. A Master of Science degree majoring in physical therapy with a specialty in geriatric physical therapy is offered jointly with the Department of Physical Therapy.
3. A Certificate Program in Aging Studies to meet the needs of persons working with the elderly but who have no academic training in gerontology.
4. A combination of the Certificate Program in Aging Studies and a Master of Social Work degree offered jointly by the School of Social Work and the Department of Gerontology.

Further information on these programs, including specific admissions requirements and program descriptions, may be found in the Virginia Commonwealth University Graduate Bulletin.

FACULTY

Professors: Ansello; Harkins
Associate Professors: Parham (Chairman); Egelhoff; Osgood; Retchin; Teitelman
Assistant Professors: Dougherty; Finley; Mulligan; Pyles; Wood
Assistant Clinical Professors: Jenkins; Orchowsky; Penberthy; Wiggins
Instructor: Meyers

GRADUATE COURSES IN GERONTOLOGY (GTY)

All students must successfully complete the following 21 hours of core courses:

601 Biological and Physiological Aging. 3 credits. Biological theories of aging: cellular, physical, systemic, and sensory change; health maintenance.

602 Psychology of Aging. 3 credits. Psychological adjust-

ment in old age; special emphasis on personality, cognitive, and emotional development; life-crises associated with the aging process. (Students must complete Social Sciences Research Methods before taking this course.)

603 Social Science Research Methods Applied to Gerontology. 3 credits. Application of social science methods and techniques to study of the aged; data sources, types of problems encountered; data analysis; research reporting; use of research findings.

604 Problems, Issues, and Trends in Gerontology. 3 credits. Application of knowledge in analysis of problems confronting aged persons, social issues and legislation, service delivery programs, current trends in gerontology.

605 Social Gerontology. 3 credits. This course will focus on the socio-psychological and sociological aspects of aging. Various socio-psychological and social theories of aging will be discussed. The course will provide a broad overview of several general topics such as the demography of aging, politics and economics of aging, and cross-cultural aspects of aging. The course will offer an in-depth analysis of particular role changes which accompany aging (i.e. retirement, widowhood, institutionalization).

606 Aging and Human Values. 3 credits. Identification and analysis of value systems of the aged, exploration of religious beliefs: death and dying; moral, ethical, and legal rights; human values and dignity.

607 Field Study in Gerontology. 3 credits. Systematic exploration and study in the field of an actual problem, issue, or task germane to the student's gerontology concentration. Application of specific concepts and approaches to assessment analysis. Arranged in consultation with the student's program advisor.

Elective Courses

410 Introduction to Gerontology. 3 credits. A survey of the field of aging with attention to physical, psychological, social, economic, and cultural ramifications of age.

501 Physiological Aging. 3 lecture hours. 3 credits. Prerequisites: GTY 410 and one advanced (undergraduate) course in biology or physiology or permission of instructor. Provides an introduction to the rudiments of physiological changes associated with human senescence. Emphasizes current findings, theories, and methods in study of bodily changes in late life. Contrasts normal age-dependent changes in anatomy, physiology, and metabolism with chronic disease processes which increase in probability with age.

612 Recreation, Leisure, and Aging. 3 credits. An analysis of the quality and quantity of leisure in maximizing the quality of life for the older person. Focus will be placed on concepts of leisure, the interrelationship of leisure service delivery systems and other supportive services, the meaning of leisure to the elderly in the community and within institutional settings, and innovative programming.

615 Aging and Mental Disorders. 3 credits. The course deals with common psychological disorders and problems of late life, their etiology, methods of evaluating psychological status, and intervention strategies which have been used successfully with older persons. Topics include epidemiology of psychological disorders and mental health service

utilization; late-life stressors and crises; psychology of health, illness, and disability; techniques and procedures in the evaluation of the older adult; functional and organic disorders; institutionalization; individual, group, and family therapy; behavioral techniques; peer counseling and crisis intervention; and drugs and the elderly.

616 Maintenance and Rehabilitation in Late Life. 3 credits. Considers practical approaches to maintaining function and use of daily activities, simple procedures, and techniques in counteracting common physical changes prevalent in later life.

624 Aging and the Minority Community. 3 credits. An analysis of the relationship between the aging process and American minority communities. In addition to the sociological factors, the course will examine demographic, physiological and psychological aspects of minority aging. Attention will also focus on dominant social problems and federal policies toward the aged.

624E Community and Community Services for the Elderly. 3 credits. A conceptual/theoretical overview of community focusing on the ecological, psychological, and social dimensions of community and on communities of the aged.

627 Psychology of Health and Health Care for the Elderly. 3 credits. Focuses on factors in the etiology, course, and treatment of illness; patient/practitioner relationship; patient compliance and psychosocial issues in terminal care.

641 Survey of Psychological Assessment and Treatment of the Older Adult. 3 credits. A combination didactic and skills training course; review of major treatment strategies and techniques for utilization with the older adult client with emphasis on group, individual, and paraprofessional delivery systems; evaluation of crisis intervention and consultation team approaches; lectures, demonstrations, and classroom practice of actual treatment techniques.

642 Practicum in Clinical Geropsychology. 3 credits. An initial practicum geared as an entry to the team practicum experience; focus on familiarizing the student with mental health service delivery systems for the elderly in the Richmond community; rotation through a limited number of facilities such as nursing homes, retirement centers, nutrition sites, emergency hotline services for the elderly, and various agencies involved in de-institutionalization; and possible extended placement in a particular facility.

691 Topical Seminar. 3 credits. Seminars on specialized areas of gerontological interest. Examples of special topic courses taught in previous years: • Nutrition and Aging, 3 credits. Focuses on nutritional problems of the elderly, and physiological and psychological effects of diet modifications. • Psychophysiology and Neurobiology of Aging, 3 credits. Focuses on age differences and changes in anatomy and physiology of the autonomic and central nervous systems. • Wellness and Aging, 3 credits. Principles and concepts of wellness will be discussed with particular emphasis placed upon dealing with specific needs of the older adult. Relevant literature in the field will be reviewed. Psychological well-being and social alienation of older members of the community will be addressed from the wellness perspective.

692 Independent Studies. 1-3 credits. Directed independent in-depth study of a particular problem or topic in gerontology about which an interest or talent has been demonstrated.

798-799 Thesis. 3-6 credits. A research study of a topic or problem approved by the thesis committee and completed in accordance with the acceptable standards for thesis writing.

Department of Health Administration

Education in health administration at the Medical College of Virginia began in 1949 with the establishment of a graduate curriculum in hospital administration. Early graduates received a certificate; the M.H.A. degree was awarded beginning in 1955.

These early efforts grew and developed into the Department of Health Administration established in 1972. The department now includes four major programs: (1) Ph.D. majoring in health sciences organization and research; (2) M.H.A. in health administration; (3) Master of Science (Health Administration Executive Program); and (4) B.S. degrees majoring in long-term health care management or health information management. A dual degree program is also offered which leads to award of the J.D. and M.H.A. degrees after four years of intensive study. In addition, a program of study which leads to recognition of a double major in health care management and medical technology is offered. The department also cooperates with the School of Nursing in its M.S. program in nursing services administration. In addition to these educational programs, the Department of Health Administration includes a growing research program and is involved in a wide range of public service activities including continuing studies for health services administrators and other health professionals.

DEPARTMENTAL PURPOSE AND FUNCTIONS

The overall purpose of the Department of Health Administration is to provide educational programs and services related to the organization and administration of health services. In achieving that purpose, the department's principal functions are to provide high-quality education leading to careers in the administration of health care institutions, agencies, and systems and to provide advanced training and education for persons who will teach, plan, evaluate, and investigate health care policies and medical care systems. Corollary functions are to provide assistance and other services for community

organizations and to conduct health services and health policy research.

FACILITIES

The Department of Health Administration's masters and undergraduate programs are located in Randolph-Minor Annex, an historic building located on the corner of College and Broad Streets on the MCV Campus. The department's doctoral program and its learning research laboratory are located on the fifth floor of the Nursing Education Building. Additional staff and faculty are located in the Lyons Building.

The Medical College of Virginia Hospitals, one of the largest teaching hospitals in the nation, and the other MCV Campus clinical facilities are readily accessible to the department's students and faculty. In addition, the department has clinical affiliations and close working relationships with a large number of health care organizations and agencies in Virginia and throughout the eastern part of the United States. These organizations and agencies are used extensively as clinical facilities in the department's educational programs.

ENDOWED AWARDS, LECTURESHIPS, AND PROFESSORSHIPS

The **Robert Hudgens Memorial Award** was established and endowed by the department's alumni association in cooperation with the American College of Healthcare Executives (ACHE). The Hudgens Award is presented annually to the person selected by a special ACHE committee as the most outstanding young hospital administrator in the United States. It is a major, nationally recognized award presented at the ACHE's Annual Congress each year.

The **Charles P. Cardwell Memorial Lecture-ship Series** was inaugurated and endowed by the department's alumni. It is held in conjunction with the ACHE's Annual Congress. The series is coordinated by a standing committee of the department's alumni association.

The endowed **Arthur Graham Glasgow Professorship of Hospital Administration** was established in 1957 in honor of Dr. Glasgow, who had demonstrated a vital interest in hospitals and hospital administration.

The **Herman L. Mullins Award** is presented annually for the most outstanding thesis or management study completed by a graduate

student in health services administration. This award was established by the M.H.A. Class of 1976 through the Health Administration Alumni Association as a lasting recognition for the contributions of Herman L. "Moon" Mullins as a teacher, advisor, and friend of the student.

The **Cardwell Society** was instituted in 1983 by departmental alumni to recognize those who annually make a major contribution to the Department of Health Administration and in memory of the founder and first director of the then School of Hospital Administration, Charles A. Cardwell, Jr. The society was established to help maintain the traditions and quality of the department through support of its residency program, expanding computer-assisted educational programs, capital and equipment requirements, and other educational and operational needs.

The department has an ongoing, major capital campaign called the **New Ventures for Excellence in Health Administration Education**. This campaign will produce major capital funding to support (1) renovation of the department's future home, the historic Sheltering Arms Hospital building (located on Clay Street); (2) strengthening of the department's Administrative Residency Program; and (3) funding for the new David G. Williamson, Jr., Institute for Health Studies.

Officially initiated in 1987, the **David G. Williamson, Jr., Institute for Health Studies** was named in memory of Mr. David G. Williamson, Jr., formerly the vice-chairman of the Hospital Corporation of America and one of the department's leading alumni. Mr. Williamson played a major role in making it possible for the institute to be established. The institute serves as a bridge between the department and administrative and clinical leaders in health care by sponsoring instructional, research, and outreach programs focused on the organization and financing of health services. Such programs are designed to help resolve the often conflicting requirement that health care organizations be simultaneously cost-effective, innovative, and responsible for serving society's needs.

A major activity recently developed by the institute is the **Executive Master's Program** in health administration. Begun in the summer of 1988, the executive program offers a 24-month master's program for individuals employed in the health care industry who are unable to interrupt their careers to return to school.

Training draws upon a number of innovative educational methodologies, including on-campus intensives, computer and audio-conferencing, and a variety of other supporting media.

PROGRAMS

1. The master's degree in health administration (M.H.A.) is designed to prepare individuals for administrative roles ultimately leading to top-level executive positions in complex health institutions. The curriculum combines emphases in strategic and operational management, using both didactic and residency teaching environments. The program requires 60 hours of course work and a residency which varies according to the student's prior experience and education.
2. The Ph.D. in health administrative sciences is designed to train students to apply research methods and scientific knowledge drawn from behavioral and managerial sciences to the study of health institutions and systems. The program is designed to prepare individuals for positions as faculty researchers, policy analysts, and top-level staff in complex health organizations. The Ph.D. degree is awarded upon successful completion of 52 semester hours of course work, preliminary examinations in the three major areas of the curriculum, and a doctoral dissertation.
3. The B.S. program in long-term and health care management leads to a baccalaureate degree in one of two areas of concentration: long-term care and health care management. The curriculum is a two-year, upper-division curriculum requiring 60 semester hours of course work and other prerequisites and qualifications. The concentration in general health care management is designed primarily for experienced individuals in the health care field. The concentration in long-term care administration has no experience requirement.
4. The B.S. program in health information management leads to a baccalaureate degree in health information management. Students are prepared to assume responsible positions in medical record and health information systems management and, upon completion of the program, are eligible to sit for the national examination to become a Registered Record Adminis-

trator (RRA). This is a two-year, upper-division program requiring 68 semester hours of course work and other prerequisites and qualifications.

5. The Master of Science program in nursing administration is a cooperative program between the department and the School of Nursing with the degree awarded by the School of Nursing.
6. Advanced study in health administration and law is now available through a dual degree program cosponsored by the department and The T. C. Williams School of Law at the University of Richmond. The program leads to the awarding of the Master of Health Administration and Juris Doctor degrees. Participants are provided the necessary expertise either to represent clients within the health care industry or to function as legal policy makers or administrators who fully appreciate the legal environment of the health care field. Applicants for this program are required to meet the admission requirements of both programs. For information regarding the Dual Degree Program, contact the Director of the MCV-VCU M.H.A. Program.
7. The Executive Master's Program is an innovative course of study leading to the award of a Master of Science degree. The program is specifically designed for self-motivated, mature, and experienced professionals who are seeking advanced preparation in health administration. The program is designed to be completed while students are working full-time.

Further information on graduate programs, including specific admissions requirements and program descriptions, may be found in the *Virginia Commonwealth University Graduate Bulletin*.

UNDERGRADUATE PROGRAMS

The Program in Long-Term and Health Care Management and the Program in Health Information Management were integrated in 1988 to form a core curriculum relating to health services management which provides students the opportunity to pursue one of three majors. Each of these majors and their unique features are described below.

Three formalized programs of study at the baccalaureate level train graduates to assume

positions in *Health Care Management*, *Long-Term Care Administration*, and *Health Information Management*. Those who concentrate in long-term care administration prepare to manage nursing homes or other long-term care facilities. Health care management, a more general field of study, prepares students for management careers in hospitals, group practices, clinics, and other settings. Graduates trained in health information management are prepared to manage the broad range of functions and activities relating to the collection, analysis, and reporting of clinical-financial information to support decision making in health care organizations. Graduates in health information management also qualify for certification as a professional Registered Record Administrator (RRA).

PROGRAM IN LONG-TERM AND HEALTH CARE MANAGEMENT PURPOSES

The program in long-term and health care management was established in 1973. Two areas of concentration are available: long-term care administration and health care management.

The purpose of the concentration in long-term care administration is to meet management needs in long-term care facilities and organizations. Health care management is a more general field of study and prepares students with prior clinical experience for careers in hospital and clinic management appropriate to the baccalaureate level of education.

The B.S. degree in health care management with either concentration is a two-year, upper-division curriculum offered by the Department of Health Administration, School of Allied Health Professions, in cooperation with the School of Business. Applicants are accepted into this program after completing a minimum of 60 semester hours of undergraduate work and meeting established prerequisites and qualifications.

Students who meet specified prerequisites and standards are accepted into the program on a transfer basis from other schools within VCU and other accredited colleges and universities, including community colleges.

ADMISSION REQUIREMENTS: LONG-TERM AND HEALTH CARE MANAGEMENT

The minimum qualifications for admission as

a part-time or full-time B.S. degree candidate are as follows:

1. The applicant must present satisfactory evidence of personal achievement, motivation, scholarship, intellectual ability, and professional promise.
2. The applicant must have attained a junior standing or have completed a minimum of 60 semester hours from schools within VCU and/or from other accredited colleges and universities, including community colleges. (If a student possesses a diploma awarded by a two- or three-year nurse training program, is currently licensed as a registered nurse, and has at least three years' experience in a responsible administrative position in a health care organization immediately prior to application, the program may award up to 45 semester hours of credit toward the B.S. degree.)
3. A significant portion of the minimum of 60 semester hours of credit to have been completed prior to admission into the program should be made up of general foundation courses. The foundation course credits should be distributed as follows:

<i>Courses</i>	<i>Credits</i>
English	6
Social Sciences	9
Humanities	6
Accounting	3
Economics	3
Mathematics	3
Science	6
Total	36

4. The applicant must have a minimum 2.0 grade-point average on a 4.0 scale.
5. Foreign applicants must meet all the regular admission requirements and take the Test of English as a Foreign Language, with a minimum TOEFL score of 550.

In admitting students to the program in long-term and health care management, the following guidelines are also used by the faculty:

1. Student admission into the program may fall under one of the following categories: acceptance or conditional acceptance. Conditional acceptance is granted to those who are in the process of completing prerequisite courses, 60 semester hours of credit, and/or foundation courses.
2. Active support will be given the expansion of education opportunities for qualified

minorities.

3. Virginia Commonwealth University is a state-supported institution; therefore, admission preference is given to applicants with equal qualifications who are residents of Virginia.
4. Preference may also be given to those individuals employed in the health care industry who have a desire to become degree candidates either on a part-time or full-time basis.
5. Part-time degree candidates are required to complete all requirements for the B.S. degree within five years from the date of initial acceptance into the program.

Further information concerning admission may be obtained by writing to University Enrollment Services/ Admissions, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA 23298-0632, or to the Department of Health Administration, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA 23298-0203.

CURRICULUM

For the baccalaureate degree, students with a concentration in either long-term care or general health care management must satisfactorily complete 39 hours of required courses within a core curriculum offered by the Department of Health Administration and the School of Business. In addition to the core curriculum, students in each concentration must complete 12 hours of specialized courses.

Core Courses (39 credit hours)

BUS 204	Introduction to Accounting II (BUS 203 prerequisite)
BUS 161	Computer Literacy (1 semester hour)
BUS 162	Applied Packages for Computers (1 semester hour)
BUS 163	BASIC Computer Programming (1 semester hour)
BUS 301	Business Statistics (or STA 213 Introduction to Statistics)
BUS 311	Financial Management (BUS 203, 204, prerequisites)
BUS 323	Legal Environment of Business
HCM 300	Health Care Organization and Services
HCM 301	Aspects of Illness and Disability
HCM 308	Fundamentals of Management in Health Care Facilities
HCM 404	Financial Management in Health Care Facilities (BUS 311 and HCM 300 prerequisites)
HCM 405	Health Law (BUS 323 and HCM 300 prerequisites)

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- HCM 406 Personnel Management in Health Care Facilities (HCM 308 or BUS 321 prerequisite)
 HCM 407 Health Planning and Marketing (HCM 300 prerequisite)
 HCM 411 Resources Management in Health Care Facilities (BUS 161, BUS 162, BUS 163 and statistics prerequisites)

Courses for Concentration in Long-term Care Administration (12 credit hours)

- HCM 302 Structure and Functions of Long-term Care Institutions
 HCM 409 Management in Long-term Care Facilities (HCM 302 plus either HCM 308 or BUS 321 prerequisite)
 HCM 493 Practicum in Long-term Care Administration (permission of instructor prerequisite)
 GTY 410 Introduction to Gerontology

HCM 493 Practicum in Long-term Care Administration is an integral part of the course work in the Concentration in Long-term Care Administration. The basic purpose of fieldwork is to provide the student with the opportunity to apply and develop administrative knowledge and skill through a period of applied educational experience. The fieldwork is directly supervised by faculty members of the Department of Health Administration and administrators designated as preceptors within institutions or agencies. This experiential component of the program usually falls in the summer between the junior and senior years and consists of 480 hours of work on the site.

Courses for Concentration in Health Care Management (12 credits)

- HCM 408 Management in Health Care Facilities (BUS 321 or HCM 308 prerequisite)
 HCM 410 Seminar in Health Care Management (HCM 408 prerequisite)

Students must elect two of the following courses as part of the concentration:

- HCM 302 Structure and Functions of Long-term Care Institutions
 BUS 308 Introduction to Marketing (ECO 201 prerequisite)
 BUS 324 Legal Aspects of the Management Process (BUS 323 prerequisite)
 BUS 325 Business Communications
 ENG 327 Business and Technical Report Writing
 BUS 327
 BUS 333 Risk and Insurance
 BUS 379 Logistics and Physical Distribution (HCM 407 or BUS 308 prerequisite)
 BUS 417 Cases in Financial Management (BUS 311 prerequisite)
 BUS 420 Seminar in Industrial Relations (permission of instructor or HCM 406 or

- BUS 331 prerequisite)
 BUS 427 Labor Law and Legislation (BUS 323 prerequisite)
 BUS 428 Employee Benefit Planning
 BUS 430 Social Insurance
 BUS 433 Compensation Management (permission of instructor or BUS 331 prerequisite)
 BUS 435 Seminar in Personnel Management (permission of instructor or BUS 331 prerequisite)
 SRA 330 Regulatory Aspects of Safety, Security, and Health
 MAC 323 Public Relations (MAC 203 prerequisite)
 POS 331 Public Administration
 SOC 445 Medical Sociology (SOC 101 prerequisite)
 SOC 446 Sociology of Mental Health and Illness (SOC 101 prerequisite)
 SRA 360 Safety and Health Technology

The remainder of the 126 hours required for the Bachelor of Science degree is satisfied by taking elective courses selected on an individual basis by the student with the assistance of a faculty advisor.

REQUIREMENTS FOR GRADUATION

To qualify for the Bachelor of Science in health care management, the student must meet the following requirements: (1) achieve a grade-point average of 2.5 on a 4.0 scale for all course work while enrolled in the program; (2) satisfactorily complete all requirements of the field experience and the required course work described above; and (3) demonstrate to the satisfaction of the faculty sufficient maturity and development to constitute readiness for a career in the health care system.

Health Information Management Program

HISTORY

The Health Information Management Program was established in 1978 as the Program in Medical Record Administration.

The program started as a cooperative venture of the McGuire Veterans Administration Medical Center, the School of Allied Health Professions, and the School of Business at VCU. The program is now an integral part of the Department of Health Administration in the School of Allied Health Professions.

PURPOSE

The purpose of the baccalaureate program in health information management is to educate

individuals who will be qualified, on successful completion of the required courses, to manage a broad range of functions and activities related to the collection, reporting, analysis, and dissemination of clinical-financial information for decision making in health care organizations. The goal of the Health Information Management Program is to prepare graduates who are technically competent to pursue a professional career either

- As a Registered Record Administrator (RRA) upon successful completion of the examination, or
- In a technical or supervisory position in medical data processing and information management.

PHILOSOPHY

The program is dedicated to the design and maintenance of a sound educational curriculum to prepare practitioners for modern health information systems in keeping with the dynamic growth of medical knowledge and information technology.

The combination of sound educational principles in the program and practical experiences in medical facilities is stressed. Every effort is made to provide shared classes and experiences with students of other related disciplines in the University. The practical experiences are scheduled in a variety of health care facilities including those of emerging delivery systems.

Basic courses taken in accredited programs of medical record administration are accepted for transfer credit in keeping with University regulations. Professional knowledge and experience acquired in practice of the profession may be validated for credit through assessment and/or proficiency examinations.

OBJECTIVES

1. To educate candidates for roles of responsibility in medical record departments, in health information management, and for other employment opportunities in clinics, insurance companies, and record centers.
2. To provide an educational environment which allows the student to develop the managerial and technical skills consistent with the practice of health information management.
3. To provide an educational curriculum that keeps abreast of the current developments

and changes within the field of health information management and to encourage scholarly concern for the pursuit of research and advanced education.

4. To encourage values which will serve as guidelines for ethical practice and deeper awareness of the community and its search for solutions to health problems.

FACILITIES

The Program of Health Information Management is housed in the Randolph Minor Annex building located on the corner of College and Broad Streets.

Students attend business and health care management courses at the Academic and MCV Campuses of VCU.

Clinical practicum is offered in medical record departments of affiliated medical care facilities in Richmond and other locations as needed.

ACCREDITATION

The program is accredited by the Committee on Allied Health Education and Accreditation of the American Medical Association in collaboration with the American Medical Record Association.

Upon satisfactory completion of the program, the student is awarded a Bachelor of Science degree in health information management by VCU and becomes eligible to take the examination for registration by the American Medical Record Association.

FINANCIAL ASSISTANCE

In addition to the financial assistance sources described in Part I, limited loan funds are available from the Virginia Medical Record Association and the American Medical Record Association. Specific details on eligibility and amounts are available through the program director.

ADMISSION REQUIREMENTS: HEALTH INFORMATION MANAGEMENT

Students are admitted to the program as juniors and must have completed 62 hours at an accredited college or university. This minimum requirement is to include

*Semester
Hours*

Humanities	
English	6
(Composition and Literature)	

Speech	2
Biological Sciences	12
Including a minimum of five semester hours of Human Anatomy and Physiology with laboratory	
Arts and Sciences	
College Mathematics or Algebra	3
Economics	2
Psychology	2
Sociology	2
Statistics	3
Electives	30
Total	62

CURRICULUM

Students in the program must satisfactorily complete the following courses:

<i>Junior Year, fall semester</i>		<i>Semester Hours</i>
HIM 300	Medical Terminology	2
PMC 371	Pathophysiology and Pharmacology I	3
BUS 360	Business Information Systems	3
BUS 323	Legal Environment of Business	3
BUS 203	Introduction to Accounting	3
HCM 300	Health Care Organization and Services	3
		17

<i>Junior Year, spring semester</i>		
HIM 313	Health Information Systems Management	4
HIM 314L	Classification Systems	3
PMC 372	Pathophysiology and Pharmacology II	3
HCM 308	Fundamentals of Management in Health Care Facilities	3
BUS 204	Introduction to Accounting	3
		16

<i>Senior Year, summer semester</i>		
HIM 393	Clinical Practicum I	4

<i>Senior Year, fall semester</i>		
HCM 411	Resource Management in Health Care Facilities	3
HCM 406	Personnel Management in Health Care Facilities	3
HCM 405	Health Law	3
BUS 346	Automated Office Concepts	3
BUS 311	Financial Management	3
		15

<i>Senior Year, spring semester</i>		
HIM 420	Quality Assurance	3
HIM 423	Clinical-Financial Information Concepts	3
HCM 410	Seminar in Health Care Management	3
HIM 494	Clinical Practicum Management II ...	3
		12
Total		64

ACADEMIC POLICIES AND REGULATIONS

Academic policies and regulations for undergraduate programs are set forth in a separate document published by the Department of Health Administration. This department document, as well as publications that provide University-wide policies and regulations, may be obtained by the applicant at the time of the interview or by written request.

HONORS, AWARDS, AND SCHOLARSHIPS

A. D. Williams Award. This award is given to the student in each class who has achieved the highest cumulative grade-point average.

A. D. Williams Scholarship. This scholarship may be given to students in the undergraduate and graduate programs of the Department of Health Administration who demonstrate satisfactory academic progress and financial need.

Herman L. Mullins Award. This award is presented annually for the most outstanding thesis or management study completed by a graduate student in health services administration. This award was established by the M.H.A. Class of 1976 through the Health Administration Alumni Association as a lasting recognition for the contributions of Herman L. "Moon" Mullins as a teacher, advisor, and friend of the student.

Leadership Award. This award may be presented to graduating students in the undergraduate and the master's degree programs of the Department of Health Administration who demonstrate significant leadership abilities and potential.

Virginia Health Care Association Scholarships. These scholarships were established by the Virginia Health Care Association in 1985 to recognize students in the program in Long-Term and Health Care Management who demonstrate significant potential as future Virginia nursing home administrators. Four scholarships are awarded each year.

PROGRAM OF CONTINUING EDUCATION

The Department of Health Administration's involvement in continuing education began in the early 1970s with the assistance of a grant from the W. K. Kellogg Foundation that included continuing education as a principal component. The basic purpose of the depart-

ment's program of continuing education is to provide educational services for persons who have administrative responsibilities in hospitals, medical centers, multi-unit systems, nursing homes, and other health care organizations and agencies.

FACULTY

Professors: Norville (Chairman); Barker; Begun; Luke; Pointer; Rossiter; Shukla; Wan; Wiecking
Associate Professors: Breindel; Dean; DeLellis; Swisher
Assistant Professors: Clement; Gurnick; Hickman; Hurley; McCue; Ozcan; Yarnel
Affiliate Associate Professors: Fischer; McGovern; O'Hallaron; Oulton
Affiliate Assistant Professors: Clark; Lieber; Rapp; Schaeffer; West
Affiliate Instructors: Leech; Johnson

COURSES OF INSTRUCTION (HCM) Undergraduate—Health Care Management

300 Health Care Organization and Services. Semester course; 3 lecture hours. 3 credits. Examines the structure and function of the U.S. health services delivery system. Examines the role and responsibilities of health care professions and occupations, technology, and financing arrangements in the delivery system.

301 Aspects of Illness and Disability. Semester course; 3 lecture hours. 3 credits. An introduction to the physiological and psychological aspects of illness and disability. Identifies factors that affect health and explores family, societal, and patient attitudes about illness and disability.

302 Structure and Functions of Long-term Care Institutions. Semester course; 3 lecture hours. 3 credits. Examines all aspects of long-term care. Particular focus on facilities and their internal operations. Considers professional personnel, major services involved as well as the external community agencies which influence long-term care all within the framework of administration.

308 Fundamentals of Management in Health Care Facilities. Semester course; 3 lecture hours. 3 credits. A survey of management and organization theory with applications to health care settings. Foundations for conceptual, technical, and human skills related to performance and management of health organizations are addressed.

392 Independent Study. Continuous course: 1–4 credits. Individual topics arranged with instructor.

404 Financial Management in Health Care Facilities. Semester course; 3 lecture hours. 3 credits. Prerequisite: Financial and Managerial Accounting, Principles of Finance. The application of accounting and financial principles to a health care facility; techniques of budgeting and cost controls; use of fiscal data in planning, decisions, and evaluation of care.

405 Health Law. Semester course; 3 lecture hours. 3 credits. Prerequisites: Legal Environment of Business and Health Care Organization and Services. Examines topics relating to the legal system, legal aspects of governance and management in health care institutions, and the law of patient care.

Emphasis will be on administrative roles in long-term and health care institutions.

406 Personnel Management in Health Care Facilities. Semester course; 3 lecture hours. 3 credits. Prerequisites: Fundamentals of Management and Health Care Organization and Services. Focuses on the major elements of personnel management and labor relations that characterize the health care facility. Includes analyses of employment practices, education and training, health and safety programs, and employee relations with emphasis on problems unique to health care facilities.

407 Health Planning and Marketing. Semester course; 3 lecture hours. 3 credits. Prerequisites: Statistics and Health Care Organization and Services. Provides the prospective health care manager with requisite knowledge and understanding of the program planning process and the facility planning and construction process. Also deals with relevant planning laws and regulations as well as the community health planning process.

408 Management in Health Care Facilities. Semester course; 3 lecture hours. 3 credits. Prerequisites: Fundamentals of Management and Health Care Organization and Services. Study of recent developments in management theory and practice to develop a foundation of human, technical, and conceptual skills necessary for successful performance as a health care manager. The management process is examined with the focus of all course activities being management in the health facility.

409 Management in Long-Term Care Facilities. Semester course; 3 lecture hours. 3 credits. Prerequisites: Fundamentals of Management and Structure and Function of Long-Term Care Institutions. Emphasis on the professional role of the long-term care administrator in providing for the health and social needs of the elderly and chronically ill. Applied skills in addressing the technical, human, and conceptual problems unique to LTC are developed through cases and exercises in long-term care administration.

410 Seminar in Health Care Management. Semester course; 3 lecture hours. 3 credits. Prerequisite: HCM 408. Integrative course in health care management. Focuses on development of management skills through applied cases and field exercises.

411 Resources Management in Health Care Facilities. Semester course; 3 lecture hours. 3 credits. Prerequisites: BUS 161, BUS 162, BUS 163, and statistics. Development of analytical skills in problem solving by using quantitative and nonquantitative analytical tools and rational models. Focus is on application of techniques appropriate to the department level in health care organizations.

493 Practicum in Long-term Care Administration. Summer fieldwork; 3 applied hours. 3 credits. Prerequisite: permission of instructor. Fieldwork under the supervision of a field preceptor and faculty advisor for 480 hours. Attendance at an integrative seminar and completion of a management study are required.

COURSES OF INSTRUCTION (HIM) Undergraduate—Health Information Management

300 Medical Terminology. Semester course; 2 lecture hours. 2 credits. Study of the language of medicine including

suffixes, prefixes, and root words. Includes special terminology associated with oncology, radiology, pharmacology, and diagnostic and therapeutic procedures by body system.

313 Health Information Systems Management. Semester course; 3 lecture hours, 4 lab hours. 4 credits. Introduction to health information systems in health care organizations. Study of the medical record profession; content of the medical record based on licensure, certification, and accreditation standards for both acute and nonacute care facilities: numbering and filing systems; indexes and registers; vital and hospital statistics; computer applications in health care and especially medical records; data and report management; data and quality and security.

314L Classification Systems. Semester course; 2 lecture hours, 4 lab hours. 3 credits. Introduction to the various disease and operation classification systems and nomenclatures. Emphasis is placed on coding diagnoses and procedures using ICD-9-CM and CPT systems. Prospective payment and its interaction with classification systems is also addressed.

393 Clinical Practicum I: Technical. Semester course; 240 clock hours. 4 credits. Major areas of concentration: numbering systems, admissions, filing systems, discharge analysis and assembly, ICD-9-CM and CPT coding, indexing, release of information, statistics.

420 Quality Assurance. Semester course; 3 lecture hours. 3 credits. Quality assessment and quality assurance systems. Utilization management. Risk management. Applications in acute care and other health care facilities.

423 Clinical-Financial Information Concepts. 3 lecture hours. 3 credits. Study of the financial concepts and management of clinical and financial information systems merger.

494 Clinical Practicum II: Management. Semester course; 180 clock hours at the end of the semester of graduation. 3 credits. Directed practice in assigned administrative functions under the direction of a registered record administrator in an affiliated medical record department. Major areas of concentration: Policy and procedure development and/or maintenance, personnel management including orientation and discipline, performance evaluation, in-service, prospective payment, budgets, productivity, resource management, quality assurance. One day during examination week will be assigned for group discussion and evaluation of the practicum.

GRADUATE COURSES IN HEALTH ADMINISTRATION (HAD)

500 Health Care Organization. Semester course; 3 lecture hours. 3 credits. Intended for students seeking degrees in disciplines other than health care administration and for special students who wish to learn about the health industry and health care organizations. Provides an overview of the health industry. Examines the organization and operations of major health care organizations with particular emphasis on hospitals.

502 Management in Health Care Facilities. Semester course; 3 lecture hours. 3 credits. Study of recent developments in management theory and practice in order to develop a foundation of technical, human, and conceptual

skills necessary for successful performance as a health care manager. Focus of course learning activities is on management of departments and services in health care institutions, especially hospitals.

602 Health Care Organization and Services. Semester course; 3 lecture hours. 3 credits. Examines the structure and functions of the American health care industry, the concepts and processes of health and illness, the institutional and individual providers of health services, and related concepts.

606 Financial Management in Health Organizations. Semester course; 3 lecture hours. 3 credits. Prerequisite: Financial Accounting. A theoretical and practical study of organization and functions of health care financial administration. Emphases are on institutional fiscal policies, accounting concepts and practices, internal and external controls, financial statistical reporting, and the use of financial data as management tools.

607 Advanced Financial Management in Health Organizations. Semester course; 3 lecture hours. 3 credits. Prerequisite: HAD 606. Advanced practices of health care financial management. Emphasis on techniques to aid in financial decision making. Areas of investigation and study include analysis of financial statements, cost allocations, reimbursements, rate setting, budgeting, and capital financing.

608 Seminar in Health Care Finance. Semester course; 3 lecture hours. 3 credits. Prerequisite: HAD 607. Advanced studies of financial issues and the application of analytic tools in case studies and exercises. Designed to enhance and strengthen the knowledge and skills provided in the graduate program's foundation and required courses in accounting and finance.

609 Health Systems Analysis and Evaluation I. Semester course; 4 lecture hours. 4 credits. Prerequisite: upper-division course in statistics. Introduction to principles and methods employed in evaluation research and program evaluation as these relate to health services. Focus will be conceptualization, design, and operation procedures used in program evaluation.

610 Health Systems Analysis and Evaluation II. Semester course; 3 lecture hours. 3 credits. Prerequisite: HAD 609. Applications of traditional industrial engineering techniques in health care institutions. Applications of operations research techniques to health care planning, control, and decision making including deterministic, stochastic, and decision analysis models and their use in health services administration.

611 Hospital and Medical Law. Semester course; 4 lecture hours. 4 credits. Examines basic principles and practices of law affecting patients and medical practice: the legal aspects of patient care and treatment, medical services, other hospital/patient-related functions, and employment law.

612 Health Information and Management Systems. Semester course; 3 lecture hours. 3 credits. Prerequisites: HAD 609 and 610. Analysis of current information and management systems including: manpower planning and productivity, financial planning and monitoring, quality assurance, staffing and scheduling, administrative information systems, and patient care systems. Evaluation of alternative uses of computer technology in health care. Uses of national and organizational data bases.

614 Health Planning and Marketing. Semester course; 3 lecture hours. 3 credits. Examines the planning process in

the context of both the community and the institution. Considers the essential components of planning and the development of a sound structure for planning. Examines the legal, regulatory, economic, and human factors that influence the planning process and addresses principles of health care marketing.

615 Health Care Politics and Policy. Semester course; 3 lecture hours. 3 credits. Examines the political process with particular emphasis on the impact of politics on health care. Focuses on current political issues in the health field, examining conflicts, and anticipating effects on the health system.

616 Seminar in Applied Health Planning. Semester course; 3 lecture hours. 3 credits. Prerequisite: HAD 614. Provides students with opportunities to apply planning methodology, including problem definition, research design and information gathering, and evaluation to actual health issues and problems.

623/Gerontology 623 Psychological Aspects of Illness and Disability. Semester course; 3 lecture hours. 3 credits. An introduction to the theories and research in the field of health psychology. Topics include the application of psychological principles to the promotion and maintenance of health, prevention and treatment of illness, relationship of stress and illness, patient/physician communication, stress and the health care provider, treatment compliance, changing self-destructive health behaviors, institutions and health care, and care for the terminally ill.

624 Health Economics. Semester course; 3 lecture hours. 3 credits. Develops an understanding of (1) economics as a managerial tool in making choices or decisions that will provide for an optimum allocation of limited health care resources and (2) economics as a way of thinking about and approaching issues of public policy in financing and organizing health and medical services. Individual research on crucial controversial issues in the health field.

626 Comparative Health Systems. Semester course; 3 lecture hours. 3 credits. Examines the structure and functions of health care systems in nations other than the United States.

632 Personnel and Labor Relations in Health Institutions. Semester course; 3 lecture hours. 3 credits. Examines the procurement, development, and maintenance of an effective work force. An analysis of staff development, health and safety, wage and salary administration, employee services, and labor relations.

634 Case Studies in Assuring the Quality of Health Care. Semester course; 3 lecture hours. 3 credits. Case studies that illustrate the relationship of administrative aims, strategies, tasks, and environment to the quality of health care. Examines the effects of health management, planning, and policy decisions on the delivery of health services.

638 Administration of Long-term Care Facilities and Programs. Semester course; 3 lecture hours. 3 credits. Focuses on unique knowledge and skills considered essential to effect long-term care administration. Emphasis is on the professional role of the long-term care administrator in providing for the health and social needs of the chronically ill and elderly. Applied skills in addressing the technical, human, and conceptual problems unique to LTC are addressed through cases and field exercises.

645 Structure and Functions of Health Organizations. Semester course; 3 lecture hours. 3 credits. Analysis of organizational and management theories applicable to health institutions. Considers organizational structure, technology, and the environment of health care institutions. Focuses on design and effectiveness and on planning and managing change in health care institutions.

646 Organizational Behavior in Health Organizations. Semester course; 4 lecture hours. 4 credits. Prerequisite: HAD 602 or permission of instructor. Focuses on the major concepts, principles, and theories of management and behavioral sciences as they relate to human behavior in health care institutions and agencies.

647 Operations Management in Health Care Organizations. Semester course; 3 lecture hours. 3 credits. Prerequisites: HAD 603 and 646. Analysis of the current state of management study and practice with the objective of achieving a balanced development of both knowledge and skills in solving the human problems of administration in health institutions. The managerial process is critically examined with emphasis on individual behavior and development, intergroup behavior, and behavior in the total organization.

648 Strategic Management in Health Care Organizations. Semester course; 3 lecture hours. 3 credits. Prerequisites: HAD 614 and 647. Integrative seminar on strategic decision making in health care organizations. Considers the concepts and alternative models of strategic management, the strategic management process, and the evaluation of strategic decisions.

649 Health Care Entrepreneurship and New Venture Management. Semester course; 3 lecture hours. 3 credits. Prerequisites: HAD 645 and 614. An advanced course in applied health services organization and management theory. Focuses on the: development of health care services, programs and products; design of new ventures (whether free-standing enterprises or components of larger organizations); and the management of organizational creativity and innovation. Marketing and strategic planning concepts are emphasized. Project provides students the opportunity to assess or design a new offering in a health service organization.

690 Departmental Research Seminar. Semester course; variable credit. Research seminar that focuses on a research design and methods organized under a single topic or a series of related topics in health services research. Applied research training for master's level students.

691 Special Topics in Health Services Organization and Research. Semester course; 3 lecture hours. 3 credits. Prerequisite: two semesters of graduate work and permission of instructor. A seminar on the current state of knowledge and research within specialized areas of concern related to health services organization, planning, and assessment.

692 Independent Study in Health Services Administration. Variable credit. Offered in all semesters for students to investigate and study topics of major interests.

693, 694, 695 Practicum in Health Services Administration I, II, III. 2 credits each. Prerequisite: admission to the administrative residency. Examination of contemporary problems and issues in the organization, administration, and evaluation of health services. A principal focus is the

application of alternative approaches to administrative problem solving. Special emphasis is placed on understanding of and appreciation for the internal and external factors that influence decision making in health care organization.

697 Directed Research. Semester course; variable credit. Special course offered on demand for one or more students who will design and implement an applied research project in the field setting under the guidance of a faculty sponsor. Focus of the course will be on the application of research methods to policy or operational problems of health care institutions.

701 Health Organization Design and Assessment. Semester course; 3 lecture hours. 3 credits. Prerequisite: HAD 602. Analysis of medical care organizations at both micro and macro levels. Critical review of empirical research in organizational analysis and design. Identifies measurement issues related to the quality of care and to formulation of evaluative research on health services programs.

702 Health Care Financing and Delivery Systems. Semester course; 3 lecture hours. 3 credits. Prerequisite: HAD 701. Critical review and evaluation of major innovations in organization, delivery, and financing of health care services. Selected topics may include cost function analysis of alternative health care delivery systems and consideration of alternative public financing of health care.

703 Strategies for Planned Change in the Health Field. Semester course; 3 lecture hours. 3 credits. Prerequisites: HAD 609 and 701. Critical review and analysis of principles and theories of planned change. Planning methodology is introduced that covers methods of health planning, program planning, and community diagnosis. The relationships between planning methods and implementation strategies are examined.

711 Long-term Care Research. Semester course; 3 lecture hours. 3 credits. Prerequisites: HAD 609 or permission of instructor. Analysis of factors contributing to the problem in the delivery of services including ambulatory care and long-term care for the chronically ill and the aged. Emphasis is placed on the application of analytic designs and evaluation research to identify alternative for institutionalization and the health care outcomes.

731 Advanced Health Economic Analysis. Semester course; 3 lecture hours. 3 credits. Prerequisites: HAD 609, 610, 624, or permission of instructor. Study of analytical methods and their applications to health economic problems. Topics include cost-benefit and cost-effectiveness analysis, Linear, integer, and dynamic techniques for economic analysis.

732 Econometrics Modeling in the Health Care Industry. Semester course; 3 lecture hours. 3 credits. Prerequisite: HAD 731 or permission of instructor. Application of statistical modeling techniques including utility models, Bayesian analyses, multiple regression analyses, time-series and cross-section analyses, and forecasting models and problems of the health industry. Techniques will be applied to such areas as demand for health services, supply of medical care, allocation of health care resources, hospital economics, and equity/efficiency of health manpower.

741 Health Industry Information Systems: Design and Evaluation. Semester course; 3 lecture hours. 3 credits. Prerequisites: HAD 609 and 610. Principles and methods of health services information systems design and evaluation. Considers characteristics, requirements, and development

of information networks for planning, administration, operation, and health services research. Cost-benefit evaluation of management information systems in the health care industry are stressed.

742 Simulation Modeling in the Health Field. Semester course; 3 lecture hours. 3 credits. Prerequisites: HAD 741 and one computer course. Analysis of complex deterministic and stochastic models and their applicability to health services research. Focus is on formulation of simulation models for planning and policy analysis of macro health delivery systems.

743 Health Manpower Planning and Productivity and Analysis. Semester course; 3 lecture hours. 3 credits. Prerequisites: HAD 701, 702, and 761. Examination of various health manpower planning models and assessment of the alternative approaches for improving the productivity of medical and allied health care manpower. Emphasis is on health manpower study design, planning methods, productivity analysis and utilization of manpower, and projection of manpower needs.

760 Quantitative Analysis of Health Care Data. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 624, HAD 609, or permission of instructor. Research course emphasizing computer application and statistical analyses of health care data generated from secondary sources.

761 Advanced Epidemiological Principles and Methods. Semester course; 3 lecture hours. 3 credits. Prerequisite: HAD 609, BUS 624, or permission of instructor. Introduction of advanced epidemiological principles and methods. Topics will include causal inferences from epidemiological studies, methods of analysis of epidemiological data, sociopathogenic factors in mortality and morbidity of specific chronic diseases, and designs of prospective or retrospective studies using a community as an epidemiological laboratory. Emphasis will be given to application of epidemiological methods to health planning, policy analysis, health services research, and program evaluation.

762 Health Services Research Methods. Semester course; 3 lecture hours. 3 credits. Prerequisites: HAD 609, 761, and BUS 636 or equivalent. Application of multivariate statistical analysis and evaluation research methods to health services research. Emphasis is placed on the use of advanced statistical methods and designs to analyze panel data in the health field.

791 Special Topics in Health Administrative Sciences. Semester course; 1–3 credits. Prerequisite: permission of instructor. Investigates a specialized content area in health administrative sciences in seminar format. Topics may change from semester to semester.

792 Independent Study in Health Administrative Sciences. Semester course; 1–3 credits. Special study or research leading to a publication. Conducted under the guidance of a faculty sponsor.

793, 794, 795, and 796 Research Practicum. Semester course; 1–3 credits. Supervised investigation of selected problems in health services research. Field research open only to second-year doctoral students who have completed the preliminary examination.

798 Thesis I. 3 credits. Independent research to provide the opportunity for the student to select, organize, and report the results of an investigation in a field of major interest.

799 Thesis II. 2 credits. Prerequisite: HAD 798. Continuation of research study begun in HAD 798.

898, 899 Doctoral Dissertation in Health Services Research. Semester course; Variable credits. Prerequisite: completion of required course work and comprehensive examination. Dissertation research under direction of faculty advisor. A minimum of nine semester hours required for Ph.D. degree.

For descriptions of courses in other schools and departments, see the current *Virginia Commonwealth University Graduate Bulletin* and/or *Virginia Commonwealth University Undergraduate Bulletin*.

Department of Medical Technology

HISTORY

Medical technologists have been trained at MCV since 1932. However, the Department (formerly school) of Medical Technology was not formally established until 1952. The school offered a certificate and/or degree program which met the requirements of the American Medical Association as implemented through the Board of Schools of the American Society of Clinical Pathologists (ASCP). In 1961–62 the certificate program was discontinued, and all students accepted were required to have previously completed 90 semester hours which included medical technology prerequisites. Upon completion of the course, the students were awarded a Bachelor of Science in medical technology degree.

In 1952 the program was established as six months of didactic experience with lectures and laboratory sessions held in the department, followed by a six-month rotation through the clinical laboratories. From 1952–1967, two classes were admitted each year, but the practice was discontinued with the graduation of the class of 1967. From 1968–74, only one class was admitted each year.

Beginning with the 1974 fall term, students must have completed 60 semester hours including medical technology prerequisites. Upon completion of the prescribed curriculum, the student is awarded a Bachelor of Science degree. In 1967 a graduate program was begun leading to a Master of Science degree in medical technology.

PROGRAMS

The department offers two programs of study:

1. Baccalaureate program consisting of two

semesters of didactic education, followed by a four-week summer session in a hospital laboratory somewhere in Virginia. During the senior year, students spend 23 weeks in the clinical laboratories. In addition to the clinical laboratory experience, the senior year includes advanced courses in each medical science discipline, one course in basic education and supervision, one course in computer applications in the clinical laboratory, and one course in clinical correlations of laboratory data with disease states. Certified medical technicians may complete the program sooner by transfer of credits and/or successfully completing challenge examinations for certain courses.

Students may be admitted on a part-time basis in both fall and spring semesters. Because of course sequencing, students accepted part-time should contact department upon notification of acceptance in order that a curriculum plan can be established prior to entrance into the program.

Students who already hold a baccalaureate degree with a major in biology or chemistry may enter a special 12-month track which begins with the summer session. During the 12 months, the students complete junior- and senior-level courses in each discipline in addition to the clinical laboratory experience. Students are admitted to this track on a full-time basis only.

2. The Master of Science program offers majors in any one of the following: clinical chemistry, hematology, clinical microbiology, instrumentation, or a combination of one of these disciplines with a management emphasis. These are offered for those students interested in becoming teachers or supervisors. Further information is found in the *VCU Graduate Bulletin*.

PHILOSOPHY

The department supports the philosophy and mission of the MCV Campus and the University. Its purpose is to provide a stimulating environment for learning and to teach professional skills. The program is directed toward providing graduates capable of meeting the state's health needs and is dedicated to maintaining and updating competency of health professionals as

well as preparing graduates to enter the medical laboratory profession.

Development of professional attitudes, emotional maturity, and ethical behavior are vital components of the educational process. The program is designed to include not only the development of skills to assure excellence in quality of health care, but also factual knowledge and experiences that will provide the basis of continuing intellectual and professional growth.

OBJECTIVES

The primary objective of the Department of Medical Technology is to provide the student with superior basic and advanced studies in medical laboratory science. The MCV Campus affords the most favorable environment to acquire this varied knowledge.

The faculty is available to provide expertise in all areas, the large hospital provides a wide spectrum of pathological conditions, and the library is able to fulfill all literature requirements.

Education is in close proximity to that of the medical student, intern, and resident; interaction with other health-related professions in the School of Allied Health Professions introduces the student to a position as a member of the medical team.

Careful attention is given to the development of the professional personality of the medical technologist. A mature, responsible approach to the acquisition of the knowledge of medical laboratory science will establish the pattern for the entire career and will provide strong, knowledgeable leaders in the clinical laboratory area.

ACCREDITATION

The Department of Medical Technology is accredited by the Committee on Allied Health Education and Accreditation of the American Medical Association. A Bachelor of Science degree in medical technology is granted by VCU upon satisfactory completion of the prescribed curriculum. Upon completion of the program, the student is eligible to take the national examinations given by the Board of Registry of the American Society of Clinical Pathologists and the National Certification Agency for Medical Laboratory Personnel (NCAMLP). This is not an affiliate program.

FACILITIES

The Department of Medical Technology is

located in the Randolph-Minor Annex Building on the MCV Campus. All faculty and clerical offices are located in this facility, as well as a student classroom, general teaching laboratory, and a student lounge/reading room. An auxiliary instrumentation laboratory is located in McGuire Hall, approximately four blocks from the primary facility.

The teaching laboratories are well equipped with the latest equipment used in today's methods of laboratory medicine.

HONORS AND AWARDS

A. D. Williams Award. An annual award may be made, on nomination of the faculty, to a student in each class who demonstrates by virtue of high scholastic attainment and professional performance, unusual promise and ability. Character, motivation, intellectual curiosity, and realization of the opportunities for personal development will be considered. The award is made at the end of the junior and senior years.

Achievement Awards. These awards may be given for each discipline in medical technology.

Daria Downing Scholarship Award. This award is in memory of Miss Daria Downing, who was the chief technologist of the clinical laboratories of MCV Hospitals from 1964 until her death in 1982. This award was established by the Departments of Pathology and Medical Technology and is given in December to an outstanding senior student in the Department of Medical Technology.

Kupfer Award. This award was first given in 1965 in memory of Dr. Henry G. Kupfer, who was medical director of the School of Medical Technology from 1952 until his death in 1964. It is given to the senior who is considered to be the best all-around technologist. Throughout the year this student must demonstrate an outstanding sense of responsibility in all phases of medical technology, a keen concern for the patients, and the ability to work with others. The student must show a desire for personal and professional growth.

The selection of the student to receive the award is made by nominations from the clinical instructors in the various areas of rotations.

FINANCIAL AID — GENERAL

Financial aid is available for all students meeting the criteria for financial assistance. Students should refer to the general section on

financial aid in this bulletin for details of the programs available.

UNDERGRADUATE PROGRAM

With the rapid advancement of knowledge in the field of laboratory medicine, the need for highly skilled and knowledgeable medical technologists has been recognized. With the establishment of the medical laboratory technician programs to meet the demands for personnel, the graduates of this program should expect to find employment not only in the technical arena, but as troubleshooters, problem solvers, and supervisors of all of the employees in the laboratory.

Applications for students applying to the two-year program are accepted upon completion of two semesters of college. Full-time students are admitted in the fall semester. Part-time students are admitted in the fall and spring semesters.

Applications for students holding a baccalaureate degree with a major in biology or chemistry and applying to the one-year track are accepted at any time during the academic year for classes beginning the following summer. Students in this track are admitted on a full-time basis only.

Junior-level offerings are devoted to lecturers and laboratory exercises in hematology, immunology, blood banking, biochemistry, clinical microscopy, microbiology, parasitology, instrumentation, and basic concepts/laboratory techniques. During a four-week summer session and 23 weeks of the senior level, student technologists learn by precept and performance in a rotating internship in the laboratories of affiliated hospitals. During the remaining time, students are in the classroom. Advanced courses in biochemistry, hematology, blood banking, and instrumentation/computer application, as well as courses in supervision/education, and clinical correlations, are provided.

ADMISSION REQUIREMENTS

To qualify for admission, a candidate must have completed a minimum of 60 semester hours of collegiate training in any college or university approved by a recognized regional accrediting agency. Accredited collegiate training in preparation for the study of medical technology, as for any professional career, should provide the opportunity for broad general education to include English, the social sciences, the arts, and the humanities. On entry to the department, the student must have completed 12 hours of chem-

istry (eight hours of general required; the remaining four hours preferred in the following order: quantitative, organic, or qualitative; other courses may be accepted); 12 hours of biology (preferred four hours of general, four hours of human physiology, and four hours of human anatomy); three hours of mathematics; and six hours of English.

Special Admissions. Certified medical technicians (or those eligible for certification) may be admitted with less than 60 semester hours. Transfer credits are accepted for some courses. Challenge examinations are offered.

Detailed information regarding admission requirements or the curricula may be obtained by writing to University Enrollment Services/Admissions, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA 23298-0632.

DEPARTMENTAL ACADEMIC REGULATIONS

The minimum passing grade is "D." A higher passing grade may be established for students required to repeat any course.

If a student has a passing grade in a course but fails the final examination, a reexamination may be given. The passing grade after reexamination cannot exceed a "D." A final grade of "F" precludes further reexamination. The course must be repeated. Detailed grading policies plus the mechanism for grade appeals are given to each student during orientation.

Academic promotion is determined by the faculty. The student is expected to

1. Maintain a grade-point average of 2.0 or better;
2. Have a passing grade in all courses;
3. Exhibit the attitudes and skills deemed necessary to function as a professional medical technologist. Students failing to demonstrate sufficient professional responsibility will be subject to dismissal from the program upon recommendation of the faculty and Executive Committee of the department; and
4. Pay all fees.

The clinical education requirements must be completed to the satisfaction of the clinical and academic faculty.

CURRICULUM

All junior-level courses offer variable credit in consideration of the differing academic back-

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grounds of entering students. Semester hours given are the maximum for each course.

<i>Junior Year</i>		<i>Semester Hours</i>
MET 300	Basic Concepts	2
MET 301-302	Hematology	9
MET 303	Parasitology	1.5
MET 304	Clinical Microscopy	2.0
MET 306	Blood Banking	5
MET 307	Introduction to Pathogenic Microbiology	3.5
MET 308	Diagnostic Microbiology, Mycology, Virology	5
MET 310	Clinical Immunology	4.5
MET 311-312	Biochemistry	8
MET 314	Clinical Instrumentation	3

Summer Session

MET 337	Clinical Education	1
		<hr/> 44.5

Senior Year

MET 407	Interpretive Clinical Immunology	2.0
MET 409	Interpretive Hematology	1.5
MET 410	Interpretive Biochemistry	1.5
MET 411	Principles of Clinical Education and Supervision	3.5
MET 412	Clinical Correlations	1
MET 414	Advanced Instrumentation	2.5
MET 415	Special Topics in Clinical Laboratory Sciences	1-6
MET 483	Biochemistry Practicum	4.5
MET 484	Immunopathology/Virology Practicum	2.5
MET 485	Hematology Practicum	4.5
MET 486	Hemostasis Practicum	1
MET 493	Clinical Microbiology Practicum	4.5
MET 494	Clinical Microscopy Practicum	1
MET 496	Blood Bank Practicum	4.5
MET 438	Research Paper	1
		<hr/> 36.5-41.5

FACULTY

Professors: Vennart (Medical Advisor); Izard (Emeritus)
Associate Professors: Odom (Chairman); Karselis; Lind-
sey; Sauer; Seaton
Assistant Professors: Prentice; Sommer
Instructor: Nadder

COURSES OF INSTRUCTION (MET)

201 Introduction to Medical Technology. Semester course; 1 lecture hour. 1 credit. Presentation and discussion of the art of medical technology including an introduction to each of the specific areas of concentration and a tour of a hospital laboratory. Explanation of the role of the medical technologist and how the MT fits into the laboratory organization. Discussion of various job opportunities for the profession. (Open to students on the Academic Campus who are interested in medical technology as a career.)

300 Basic Concepts. Semester course; 2 lecture hours. 2

credits. An introduction to the basic concepts/techniques applicable to all laboratory science areas. Includes optical physics, quality control, laboratory safety, medical terminology, and pipetting techniques along with other basic subjects.

301-302 Hematology. Continuous course; 5 lecture and 8 laboratory hours. 2-9 credits. A study of the blood and blood-forming tissues. Emphasis is placed on hematologic techniques, accurate identification of normal and abnormal cells, and their correlation with normal or pathologic conditions. An introduction to the hemostatic mechanism is also presented.

303 Parasitology. Semester course; 1 lecture and 1 laboratory hour. 0.5-1.5 credits. A study of the life cycles of parasites and techniques used for isolation and identification of common parasites found in man.

304 Clinical Microscopy. Semester course; 1 lecture and 2 laboratory hours. 1-2 credits. A study of the principles and practices of urinalysis, kidney function, gastric analysis, cerebrospinal fluid, and other body fluids.

306 Blood Banking. Semester course; 3 lecture and 4 laboratory hours. 2-5 credits. A study of the theory and principles of blood banking, with an emphasis on methods and techniques used in the laboratory for cell typing, cross-matching, and antibody identification.

307 Introduction to Pathogenic Microbiology. Semester course; 3 lecture and 1 laboratory hour. 0.5-3.5 credits. Fundamental principles of diagnostic pathogenic microbiology.

308 Diagnostic Microbiology, Mycology, Virology. Semester course; 3 lecture and 4 laboratory hours. 3-5 credits. The study of bacteria, fungi, viruses, antimicrobial susceptibility testing, and quality control; the relationship of bacteria, fungi, and viruses to infectious diseases including pathogenesis and epidemiology. Emphasis is placed on the techniques, methods, and procedures required to isolate and identify pathogenic microorganisms.

310 Clinical Immunology. Semester course; 3 lecture and 3 laboratory hours. 3-4.5 credits. Basic principles of immunology and serology are introduced. Emphasis is placed on laboratory evaluation of the immune response including both cellular and humoral aspects. Serologic techniques are practiced in the laboratory sessions.

311-312 Biochemistry. Continuous course; 6 lecture and 4 laboratory hours. 3-8 credits. A study of metabolism in normal and disease processes of the body. Emphasis is placed on the principles and methods used in testing biochemical reactions.

314 Clinical Instrumentation. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Covers instrumentation found in clinical laboratories, including an introduction to electronic principles as applied to instrumentation. Course will examine the theory and application behind the various analytical methods used in clinical analysis.

337 Clinical Education. Summer course; 160 clock hours. 1 credit. Supervised clinical experience in hospitals across the state is designed to give the student a broader clinical education. In addition to the application of academically acquired knowledge, this affiliation provides an opportunity for the student to correlate each area of study into one composite picture for final laboratory diagnosis. Closer

working relationship with other allied health personnel will be an important aspect of this affiliation.

407 Interpretive Clinical Immunology. Semester course; 2 lecture hours. 2 credits. Prerequisites: MET 306, 310, 486, and 496 or permission of instructor. Advanced study of the principles of immunology and immunoematology, with major emphasis on blood group systems and blood components. Includes the application of laboratory data and techniques to solve problems in the Blood Bank, clinical immunology and serology laboratories.

409 Interpretive Hematology. Semester course; 1.5 lecture hours. 1.5 credits. Prerequisites: MET 301–302, 485, and 486 or permission of instructor. Advanced study of the principles of hematopoiesis and their pathophysiological correlation to hematological disorders. Interpretation of morphological findings are correlated with case histories. Includes hemostatic problems.

410 Interpretative Biochemistry. Semester course; 1.5 lecture hours. 1.5 credits. Prerequisite: MET 311–312 or permission of instructor. An advanced study of intermediary metabolism and its relation to pathological disorders.

411 Principles of Clinical Education and Supervision in the Clinical Laboratory. Semester course; 2.5–3.5 lecture hours. 2.5–3.5 credits. Introduction to the basic principles of educational theories and practice. Introduction to the basic principles of management and employee relations. Emphasis is placed on the application of these in the clinical laboratory.

412 Clinical Correlations. Semester course; 1 lecture hour. 1 credit. Interrelationships of the various laboratory disciplines are discussed. The role each plays in the evaluation of selected disease processes is presented using a case discussion format.

414 Advanced Instrumentation. Semester course; 1.5 lecture and 3 laboratory hours. 1.5–2.5 credits. Survey of major clinical instrument systems, their operational principles, and the control and data manipulation methods associated with them, including imaging techniques. Computer application is stressed with individual student assignments to computer use.

415 Special Topics in Clinical Laboratory Sciences. Semester course; 1–6 credits. Course provides for tutorial studies, laboratory experience, and/or library assignments in specialized areas for those students who have previous course work or laboratory experience in a specific subject.

438 Research Paper. Semester course; 1 lecture hour. 1 credit. This course is designed to introduce the student to the fundamentals of scientific writing.

483 Biochemistry Practicum. Semester course; 32–184 clock hours. 1–4.5 credits. Prerequisites: MET 311–312. Individual participation in hospital chemistry laboratories. Students gain practical experience in the use of procedures and instruments by working with the staff. After gaining competence, students are expected to perform and sign out routine laboratory work.

484 Immunopathology/Virology Practicum. Semester course; 96 clock hours. 2.5 credits. Prerequisites: MET 308 and MET 310. Individual participation in hospital serology laboratory. Students gain practical experience in the performance and use of procedures by working with the clinical staff. After gaining competence, the students are expected to properly perform and sign out routine laboratory work.

485 Hematology Practicum. Semester course; 32–184 clock hours. 1–4.5 credits. Prerequisites: MET 301–302. Students gain practical experience in the use of procedures and instruments by working with the staff. After gaining competence, the students are expected to perform and sign out routine laboratory work.

486 Hemostasis Practicum. Semester course; 40 clock hours. 1 credit. Prerequisite: MET 301. Students gain practical experience in the use of instruments and the performance of procedures by working with the clinical staff. After gaining competence, students are expected to properly perform and sign out routine laboratory work.

493 Clinical Microbiology Practicum. Semester course; 32–184 clock hours. 1–4.5 credits. Prerequisite: MET 308. Individual participation in hospital bacteriology laboratories. Students gain practical experience in the performance and use of procedures by working with the clinical staff. After gaining competence, the students are expected to properly perform and sign out routine laboratory work.

494 Clinical Microscopy Practicum. Semester course; 40 clock hours. 1 credit. Prerequisite: MET 311. Individual participation in hospital fluid laboratories. Students gain practical experience in the use of procedures and instruments by working with the staff. After gaining competence, the students are expected to perform and sign out routine laboratory work.

496 Blood Bank Practicum. Semester course; 32–184 clock hours. 1–4.5 credits. Prerequisite: MET 306. Individual participation in hospital blood bank laboratories and Richmond Metropolitan Blood Services. Students gain practical experience in the use of procedures, instruments, donor drawing, and component preparation by working with the staff. After gaining competence, the students are expected to perform and sign out routine laboratory work.

GRADUATE COURSES (MET)

501 Instrumental Methods of Analysis I. Semester course; 2 lecture and 4 laboratory hours. 2–4 credits. Prerequisite: permission of instructor. A study of modern research and clinical laboratory instrumentation and procedures. Principles, theory, and comparison of laboratory instruments will be discussed in detail along with the factors affecting their operation. Two credit hours will be given students upon successful completion of the lecture portion of the course. Laboratory exercises have been designed to demonstrate the practical applications of the instruments studied in the research and clinical laboratory. Two additional credit hours will be given to students who elect and satisfactorily complete this option. Areas to be covered include spectrophotometry, fluorometry, flame emission photometry, and atomic absorption spectrophotometry. Offered alternate years.

502 Instrumental Methods of Analysis II. Semester course; 2 lecture and 4 laboratory hours. 2–4 credits. Prerequisite: permission of instructor. A study of modern research and clinical laboratory instrumentation and procedures. Principles, theory, and comparison of laboratory instruments will be discussed in detail along with the factors affecting their operation. Two credit hours will be given students upon successful completion of the lecture portion of the course. Laboratory exercises have been designed to demonstrate the practical applications of the instruments studied in the

research and clinical laboratory. Two additional credit hours will be given to students who elect and satisfactorily complete this option. Areas to be covered include electrophoresis, chromatography, particle counters, radioisotope counters, and clinical laboratory automation.

580 Supervision and Administration in Medical Technology. Semester course; 3 lecture hours. 3 credits. This course is designed for students who will be assuming leadership roles in medical technology. Special emphasis will be placed on the role of the medical technologist in education. Topics to be covered include curriculum design, laboratory design, including teaching areas; budgeting, interviewing, ordering equipment and supplies; and requirements for accreditation of approved programs for MT, MLT.

601 Theoretical Blood Banking. Semester course; 3 lecture hours. 3 credits. Prerequisite: permission of the instructor. A comprehensive study of the blood groups in man, including biochemistry, genetics, and clinical significance. Some topics relating to problems with antibodies to the blood groups will also be discussed.

605 Advanced Hematology. Semester course; 2–4 lecture hours. 2–4 credits. To enable the student to understand the basis for special procedures used in hematology and their application in differentiating blood dyscrasias.

610 Interpretative Clinical Hematology. Semester course; 2 lecture hours. 2 credits. Prerequisite: permission of instructor. The aim of this course is to present the principles of hematopoiesis and to study related pathological and pathophysiological correlation of hematological disorders.

690 Medical Technology Seminar. Semester course; 1 lecture hour. 1 credit. Presentation and discussion of current research and topics of interest by the departmental faculty, graduate students, and visiting lecturers.

691 Special Topics in Medical Technology. Semester course; 1–4 credits. This course provides for lectures, tutorial studies, and/or library assignments in specialized areas not available in formal courses or research training.

696 Advanced Blood Bank Practicum. 6 laboratory hours. 2 credits. Prerequisite: MET 601. A laboratory course with practical experience in blood group serological testing, donor drawing, component preparation, donor processing, and instruction of undergraduate students. Discussion of unusual cases will also be a part of the laboratory course.

790 Research in Medical Technology. Continuous course; 1–15 credits. Research leading to the M.S. degree.

Department of Nurse Anesthesia

HISTORY

The Department of Nurse Anesthesia was the first new teaching program to be implemented in the newly organized School of Allied Health Professions at the Medical College of Virginia of Virginia Commonwealth University. The Master of Science degree in nurse anesthesia, which was initiated in 1979, is the first such offering through a school of allied health professions in the United States. The faculty believes that the master's degree level of education is fundamental to

preparing diversified clinical specialists in nurse anesthesia, future teachers, coordinators, and directors of nurse anesthesia educational programs. A post-graduate Certified Registered Nurse Anesthetist (CRNA) Program has been offered since 1980.

PROGRAMS

Two courses of study are provided:

1. Basic Professional Degree is designed for college graduates with current nursing licensure and a year's experience. The program is 24 months in length and includes didactic, clinical, and research components.
2. Postgraduate CRNA Program provides the postgraduate certified registered nurse anesthetist with a greater depth of study in the basic sciences and anesthesiology as well as skills in educational instruction, research, and consultation. The program is four semesters (16 months) in length.

Further information, including specific admissions requirements, curriculum, and course descriptions, may be found in the *Virginia Commonwealth University Graduate Bulletin*.

CURRICULUM

First Year, fall semester		Credits
NUA 501	Fundamentals of Anesthesia Practice	3
PHC 531	Medicinal Chemistry for Nurse Anesthetists I	4
PMC 515	Pharmacology for Nurse Anesthetists I	3
PIO 501	Advanced Mammalian Physiology...	5
		15
First Year, spring semester		
NUA 531	Regional Anesthesia	2
PHC 532	Medicinal Chemistry for Nurse Anesthetists II	3
PMC 516	Pharmacology for Nurse Anesthetists II	3
NUA 533	Pathophysiology: Anesthetic Considerations	3
NUA 555	Ethical and Legal Aspects of Anesthesia Practice	2
NUA 593	Clinical Practicum I	1
		14
First Year, summer session		
NUA 535	Historical Development of Anesthesia	1
NUA 551	Advanced Practice and Principles of Anesthesia	4

NUA 553	Biomedical Instrumentation for Nurse Anesthetists	2
NUA 594	Clinical Practicum II	5
		12
Second Year, fall semester		
NUR 570	Methods of Research	3
NUA 601	Physical Assessment	3
NUA 573	Teaching in Nurse Anesthesia Programs I	3
NUA 692	Clinical Practicum III	4
		13
Second Year, spring semester		
NUA 631	Advanced Clinical Anesthesia Seminar	1
NUA 698	Research I	2
NUA 574	Teaching in Nurse Anesthesia Programs II	2
NUA 693	Clinical Practicum IV	4
AHP 591	Special Topics (Research Seminar) ...	1
		10
Second Year, summer session		
NUA 699	Research II	4
NUA 694	Clinical Practicum V	5
		9

FACULTY

Professors: Watson (Chairman); Blass (Medical Advisor)
 Assistant Professors: Beeston; Bowman, B.; Bowman, T.;
 Broadwell; Embrey; Fiedler; Hartland; Moore, C.;
 Moore, G.; Pontiff; Shalenko
 Assistant Clinical Professors: Bradford; Ferro; Wheat
 Instructors: Brown; Tanner; Wilkinson
 Clinical Instructor: Weil

COURSES OF INSTRUCTION (NUA)

501 Fundamentals of Anesthesia Practice. Semester course; 2 lecture, 5 clinical, and 1 laboratory hour. 3 credits. This course introduces the beginning practitioner to those concepts necessary to plan and execute an anesthetic individually planned for a patient which ensures a margin of patient safety while meeting surgical requirements. Includes selected concepts of respiratory therapy which interface with anesthesia. (Program includes a 4-week clinical affiliation in respiratory therapy.)

531 Regional Anesthesia. Semester course; 2 lecture hours. 2 credits. A study of the theoretical and practical considerations involved in the administration and management of regional analgesia: neuroanatomy, neurophysiology, neuropharmacology, indications, contraindications, techniques, complications, and their prevention related to selected blocks. (Clinical anesthesia practicum will include practical experience in the administration and/or management of selected blocks.)

533 Pathophysiology. Semester course; 3 lecture hours. 3 credits. Pathophysiology of the neuromuscular, cardiovascular, respiratory, excretory, and endocrine systems; infectious diseases. gastrointestinal disorders; nutritional disorders; connective tissue diseases; muscle, skin, bone disorders; and environmental and behavioral disorders. The

pathophysiology will be studied in relationship to anesthetic considerations.

535 Historical Development of Anesthesia. Semester course; 1 lecture hour. 1 credit. A study of the history of anesthesia, to include the evolutionary stages in the development of anesthesia and the professional organizations, the American Association of Nurse Anesthetists and the American Society of Anesthesiologists.

551 Advanced Practice and Principles of Anesthesia. Semester course; 4 lecture hours. 4 credits. This course delineates those practices and techniques of anesthesia management considered as situation-specific for specialized surgical procedures, diagnostic, or therapeutic procedures; includes the obstetrical, pediatric, and geriatric patient.

553 Biomedical Instrumentation for Nurse Anesthetists. Semester course; 2 lecture hours. 2 credits. A course surveying the essentials of biomedical instrumentation as used in those electronic devices most often encountered by nurse anesthetists; to include a brief descriptive review of the basic laws of electrical circuits and the physical principles of biophysical measurement.

555 Ethical and Legal Aspects of Anesthesia Practice. Semester course; 2 lecture hours. 2 credits. This course includes five areas of professional focus: psychosocial, ethics, legal aspects; organization and management of an anesthesia department; and basic life support (CPR) for health professionals.

573 Teaching in Nurse Anesthesia Programs I. Semester course; 3 lecture hours. 3 credits. I. Systematic study of curriculum development models and specific teaching techniques effective with nurse anesthetists. Explore relevant learning theories and implications for nurse anesthesia education. Analysis of individual instruction and multiple teaching strategies pertinent to nurse anesthesia education. Examine small and large group techniques appropriate for nurse anesthesiology. Introduction to basics in designing instructional programs for nurse anesthetists.

574 Teaching in Nurse Anesthesia Programs II. Semester course; 2 lecture hours. 2 credits. II. Prerequisite: NUA 573. Designed to integrate theory with practical application. Select a clinical anesthesia topic, prepare a comprehensive manuscript and present a detailed lecture with appropriate behavioral objectives supported with audiovisual techniques focused for a specific audience. Course activities are designed and evaluated by students and faculty member.

593 Clinical Practicum I. Semester course; 9 clinical hours. 1 credit. The student preoperatively conducts interviews, prepares anesthesia care plans with selection of anesthetic agents and techniques, calculates fluid requirements; is introduced to clinical area with supervised participation in actual administration of anesthesia. Knowledge of equipment and monitors, skills, dexterity, and ability to integrate physiological data in anesthesia management, its termination, and post-anesthetic care is demonstrated.

594 Clinical Practicum II. Semester course; 40 clinical hours. 5 credits. Continuation of NUA 593. Internalization of theoretical concepts and techniques and application in anesthetic management are demonstrated with emphasis on assuming greater responsibility for total anesthetic regimen.

The student progresses to a greater variety and more complex anesthetic managements, including experience in emergency and acute trauma surgical anesthesia.

601 Physical Assessment. Semester course; 3 lecture hours. 3 credits. A didactic and laboratory study of the physical examination to provide the graduate with the capability of performing a screening, pre-anesthesia examination aimed at identifying pathology rather than diagnosing particular disease entities, to include taking an appropriate health history.

631 Advanced Clinical Anesthesia Seminar. Semester course; 2 seminar hours. 1 credit. II. Intensive study of the advanced concepts and principles of anesthesia management. Individual and group presentations on specific assigned clinical anesthesia topics from current anesthesia literature.

692 Clinical Practicum III. Semester course; 3 clinical hours. 4 credits. Continuation of NUA 594. Intensive clinical experience in each of the clinical anesthesia areas. Greater emphasis is placed on development of independent decision making in planning, managing, terminating, and follow-up anesthesia care. Includes rotation of clinical experience to include affiliations at Richmond Community Hospital, Children's Hospital, and McGuire Veterans Administration Medical Center to gain experience in management of specialized anesthetic considerations, and functioning in a variety of clinical settings in conjunction with certified registered nurse anesthetists and staff attending anesthesiologists. Assesses clinical experience and plans for anesthesia project.

693 Clinical Practicum IV. Semester course; 30 clinical hours. 4 credits. Continuation of NUA 692. Affiliations to specialized areas continue. Beginning to function with a minimum of supervision from certified registered nurse anesthetists and attending staff anesthesiologists. Pursues independent library research and collects clinical data to support anesthesia project.

694 Clinical Practicum V. Semester course; 40 clinical hours. 5 credits. Continuation of NUA 693. Intensive application of all previous clinical experiences to demonstrate development of independent thought and judgment and ability to function with a minimum of supervision. Correlates clinical data with anesthesia project in preparation for presentation. Reviews all clinical experiences in preparation for writing qualifying examination of Council on Certification of Nurse Anesthetists. All clinical requirements are completed.

696 Advanced Clinical Practicum. Semester course; 8 clinical hours. 1 credit. Selected clinical anesthesia experiences for the postgraduate certified registered nurse anesthetist (specialty anesthesia and anesthetic techniques). Provides collection of clinical data in support of clinical project/thesis.

698-699 Research I and II. 2 semesters. 6 credits. I and II. Required of all students. Thesis and non-thesis options available. The thesis option provides the student an opportunity to select, organize, and report the results of an investigation into a specific area of clinical anesthesiology. The non-thesis option affords the student an opportunity to gain experiences with guided library research and guided faculty research practicum.

Department of Occupational Therapy

HISTORY

The program in occupational therapy was initiated at Richmond Professional Institute in 1942.

In 1965 the graduate program leading to a Master of Science degree in basic professional education in occupational therapy was initiated. The School of Occupational Therapy became a department in the School of Allied Health Professions in 1970 after the creation of Virginia Commonwealth University.

PHILOSOPHY

"Occupational therapy provides service to those individuals whose abilities to cope with tasks of living are threatened or impaired by development deficits—the aging process, poverty, cultural differences, physical injury or illness, or psychologic and social disability."¹

Humans, as complex biopsychosocial beings who possess an internal need to explore and master their surroundings, exist in an environment that requires them to maintain themselves and contribute to society and culture. These activities and tasks associated with peoples' roles and societal expectations comprise occupational performance.

When physical or mental illness, developmental deficits, or societal conditions alter individuals' abilities to adapt to, and to control, their environments, occupational therapists evaluate and intervene, using purposeful activity. Thus, occupation serves as both goal and means of therapy which is carried out within the context of the larger physical, social, and cultural environment.

Preparation of students to assume their future role in assisting their patients to develop, restore, or maintain their occupational functioning must include understanding of theory and concepts underlying human behavior and development, mastery of technical skills, and knowledge of the larger health care system. They must also be prepared to plan and manage their services, validate their practice, and educate others. This is accomplished by using a wide variety of teaching modalities and learning experiences,

¹From *Definition and Functions*. American Occupational Therapy Association.

critical examination of accepted practices, and active involvement in their own learning.

OBJECTIVES

The objectives of the Department of Occupational Therapy, in consonance with the mission of the University and the School of Allied Health Professions, are

1. to provide an atmosphere which fosters the development of student attitudes of commitment to personal and professional competence; which stresses student acquisition of professional skills along with the desire and means for lifelong learning; and in which faculty both guide and model these processes.
2. to provide an environment in which faculty strive for excellence in teaching, scholarship, and service; in which diversity is valued in both education and professional theory and practice.
3. to provide opportunities for therapists in the surrounding area to take courses and for those in the region to attend continuing education programs.
4. to foster research and scholarship to faculty to develop occupational therapy theory and to improve professional practice; educational experiences to enable students to be intelligent research consumers and to use methods of scientific inquiry in validation of their practice.
5. to recognize the humanities as an important base for professional practice and the utilization of a liberal approach to education for the profession.
6. to provide leadership in activities which serve to identify professional needs and assist in their resolution; involvement in occupational therapy and other relevant community services to meet particular education needs of students and to maintain faculty professional competence.

These objectives contribute to the primary purpose of the department, the education of well qualified, entry-level occupational therapists and professional leaders for the state and the nation.

ACCREDITATION

Both the undergraduate and professional master's degree programs in occupational therapy at Virginia Commonwealth University are accredited by the American Occupational Ther-

apy Association and the Committee on Allied Health Education and Accreditation, American Medical Association.

FACILITIES

The educational facilities of the Department of Occupational Therapy are located in the VMI Building at the northeast corner of Tenth and Marshall Streets.

During the junior and senior years and the two years of the professional master's degree program, fieldwork assignments related to courses are made for students in a wide range of clinics and agencies in the Richmond metropolitan area. A minimum full-time 24-week extended fieldwork requirement will be arranged in approved clinical educational facilities throughout the United States.

HONORS AND AWARDS

A. D. Williams Award. An annual award presented to the student who has achieved the highest academic average each year in the undergraduate program and each year in the professional master's degree program.

C. A. Kooiman Memorial Award. This award is given in memory of C. A. Kooiman, director of the occupational therapy curricula from 1961 until his death in 1976. The award is made annually to the professional graduate student completing the best research project.

PROGRAMS

Four courses of study are offered:

1. A curriculum leading to the Bachelor of Science degree majoring in occupational therapy requires the completion of a minimum of 140 semester credits of work including over 960 clock hours of fieldwork experience. Twelve weeks of the fieldwork must be continuous.
2. A Master of Science degree majoring in occupational therapy designed for college graduates who wish to become occupational therapists. This program may be completed in two calendar years or may be individually designed for students who need a slower pace. The professional master's degree program includes academic courses, a research project, and a minimum of 24 weeks in full-time fieldwork.
3. A Master of Science degree program for registered occupational therapists. This

post-professional master's degree program is individually designed in special areas of concentration. A minimum of 33 semester hours including a thesis is required.

4. A Master of Science concentration track for occupational therapists with interest and experience in hand management.

Detailed information on graduate programs including specific admissions requirements may be found in the *Virginia Commonwealth University Graduate Bulletin*.

UNDERGRADUATE ADMISSION REQUIREMENTS

Students wishing to pursue a course of study leading to a Bachelor of Science degree in occupational therapy offered through the School of Allied Health Professions may be admitted after two years of college work. A total of 62 semester credits from an accredited college or university is required for entrance into the professional curriculum. Preference will be given to students who exhibit good potential for occupational therapy. An interview by members of the Admissions Committee is required in addition to information related to other criteria.

Prerequisites for Admission

English	6 semester hours
(Three credits of composition are required.)	
Biological Sciences	12 semester hours
Must include laboratory courses in human physiology and anatomy	
Psychology	12 semester hours
Must include developmental psychology and abnormal psychology	
Sociology	6 semester hours
Statistics	2 semester hours

These are considered minimum requirements. Students are encouraged to pursue further study in biology, psychology, sociology, liberal arts, and science courses which develop intellectual competence, enrich interest areas, and promote an awareness of a breadth of social and cultural values.

Criteria for admission include grade-point average, writing skills, volunteer or paid employment, and personal qualities.

Correspondence relating to the curriculum in occupational therapy should be addressed to the Chairman, Department of Occupational Therapy, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA 23298-0008.

For application to the professional curriculum and catalog, requests should be addressed to

University Enrollment Services/Admissions, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA 23298-0632.

CURRICULUM

<i>Junior Year, fall semester</i>		<i>Credits</i>
BIO 465	Functional Human Anatomy	4
OCT 301	Communications and Group Dynamics	3
OCT 303	Developmental Tasks and Occupational Roles I	1
OCT 304	Developmental Tasks and Occupational Roles II	1
OCT 307	Psychosocial Dysfunction and Occupational Therapy I	3
OCT 309	Skills Laboratory I	3
		<hr/> 15

<i>Junior Year, spring semester</i>		
BIO 429	Neuroanatomy	3
OCT 305	Physical Dysfunction and Occupational Therapy I	3
OCT 306	Physical Dysfunction and Occupational Therapy II	3
OCT 308	Psychosocial Dysfunction and Occupational Therapy II	3
OCT 310	Skills Laboratory II	2
		<hr/> 14

<i>Senior Year, fall semester</i>		
OCT 403	Developmental Tasks and Occupational Roles III	2
OCT 405	Physical Dysfunction and Occupational Therapy III	5
OCT 407	Psychosocial Dysfunction and Occupational Therapy III	5
OCT 409	Skills Laboratory III	2
OCT 411	Theories of Occupational Therapy	2
		<hr/> 16

<i>Senior Year, spring semester</i>		
OCT 412	Administration and Supervision of Occupational Therapy Services	3
OCT 414	Research Methods in Occupational Therapy	3
OCT 418	Occupational Therapy in Health Care	3
OCT 491	Special Topics in Occupational Therapy	3
	Elective	3
		<hr/> 15

<i>Fieldwork Sessions</i>		
OCT 493	Fieldwork—Psychosocial Dysfunction	1-9
OCT 494	Fieldwork—Physical Dysfunction	1-9
OCT 495	Fieldwork—Specialty (Optional)	1-9

Upon successful completion of the program, students are eligible to take the national certification examination administered by the American Occupational Therapy Certification Board. Certification is required by most employers as proof of professional competence.

Undergraduate Program

To continue in the undergraduate occupational therapy curriculum, students are expected to maintain a cumulative grade point average (GPA) of 2.0 calculated on courses following matriculation and to demonstrate a level of competence in all subject matter.

1. Undergraduate students who fail to maintain a cumulative GPA of 2.0 at the end of the first period of enrollment and each subsequent semester, or accumulate more than one "D" grade in their OT curriculum (regardless of the cumulative GPA) will be placed automatically on probation and notified by the Committee on Academic Standing and Student Progress.
2. Students who receive an "F" grade in any required course will be considered for dismissal. If the Committee on Academic Standing and Student Progress decides that dismissal is not warranted, students will be automatically placed on probation.
3. Conditions of Probation — students must earn a quality point average the semester of probation sufficient to result in a cumulative GPA of 2.0. Students who are on probation due to "D" grades must retake all but one "D" grade course(s) as designated by the committee, achieving a grade of "C" or better while also meeting all other academic standards.

Conditions of probation may also include recommendations for academic counseling, assignments by individual instructors, and other requirements identified by the committee.

Only one semester of academic probation is permitted. Students who fail to meet academic standards during the semester of probation or do not successfully complete deficient courses will be considered for dismissal from the program.

Since courses are usually offered only once a year and since early courses serve as prerequisites for later courses, probationary students will have to continue under an adjusted curriculum plan. This will result in extending the student's time in the program.

4. If a student withdraws or is terminated by the clinical facility before the completion of the Fieldwork Level II course because of poor performance or because of unsafe practices with patients, the student will

receive an "F" grade for the course. If a student withdraws, is terminated, or fails a fieldwork experience, the course may be repeated only upon approval by the committee in consultation with the department chairman and the fieldwork coordinator. Students may be dismissed from the program or be allowed to continue contingent upon fulfilling remedial activities based on a plan prepared by the fieldwork coordinator and ratified by the Committee on Academic Standing. No more than one additional fieldwork experience will be rescheduled. Opportunity to re-register and repeat the fieldwork course is contingent upon the fieldwork coordinator's ability to locate another facility willing to offer a fieldwork experience to the student and the affirmative support of the committee.

Students who have not fully met the requirements for admission may be admitted into the undergraduate program on a conditional status. Advancement to full status may be approved by the Committee on Academic Standing and Student Progress when the student has satisfactorily completed one semester of full-time undergraduate studies. Students admitted on conditional status will be considered for dismissal from the undergraduate program at the end of this first semester of undergraduate studies if they have not earned a 2.0 GPA. Conditional status is a probationary status; the requirements for advancement to regular status are specified in the student's conditional admittance letter prepared by the Undergraduate Admissions Committee.

5. To continue in good standing, students are also expected to
 - a. Pay all fees;
 - b. Maintain ethical behavior consistent with professional practice as defined in the *Occupational Therapy Student Handbook*; and
 - c. Complete fieldwork requirements to the satisfaction of clinical and academic faculty.
6. Although arrangements are made in advance, students are reviewed prior to placement in Fieldwork II education. Students must have satisfactorily completed courses prerequisite to that field-

work experience and be recommended by the faculty. They must also demonstrate professional behavior as specified in the ethical behavior listed in the *Occupational Therapy Student Handbook*. Medical problems or emotional instability may delay or prevent fieldwork placement.

FACULTY

Professors: Madigan (Chairman); Maurer, P.; Maynard
Associate Professors: Jeffrey; Nelson; Watts
Assistant Professors: Brollier; Cash; Scussel; Shepherd, J.
Assistant Clinical Professors: Gusich; Harrison; Osorio
Clinical Instructors: Atherton; Bowis; Dawe; Dise; Ernst;
Goodwyn; Granger; Hanshaw; Lawson; Moore, P.;
Parker; Powell; Selznick; Shepherd, M.; Smith, D.

COURSES OF INSTRUCTION (OCT)

BIO 429 Neuroanatomy. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: BIO 465 or permission of instructor. A study of the morphology and functional aspects of the central and peripheral nervous system of the human body.

BIO 465 Functional Human Anatomy. Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisite: BIO 205 or equivalent. A study of the anatomy and kinesiology of the human body using prosected specimens and the dissected cadaver. Particular emphasis is placed upon the study of the extremities. Intended primarily for majors in occupational therapy; not applicable to the major in biology.

301 Communications and Group Dynamics. Semester course; 2 lecture and 2 laboratory hours. 3 credits. This course is designed to introduce the occupational therapy student to the following: elements of effective communication in interpersonal relationships, nonverbal communication, problem-solving techniques, information-gathering techniques (observation, interview, documentary search, questionnaires), learning-teaching approaches, documentation, and use of medical terminology. The necessity of knowledge of these areas for appropriate professional communication is stressed.

303 Developmental Tasks and Occupational Roles I. Semester course; 1 lecture hour. 1 credit. This course explores principles of growth and processes of developmental adaptation of the infant through the childhood years. Performance skills related to self-help tasks, play/leisure tasks, and school/work tasks, viewed as occupational roles, are the focus of this course.

304 Developmental Tasks and Occupational Roles II. Semester course; 1 lecture hour. 1 credit. A study of adolescent ontogenesis and developmental tasks as they interrelate with occupational choice and preparation for later occupational roles. The course will examine the relationship of occupational development to life adaptation.

305 Physical Dysfunction and Occupational Therapy I. Semester course; 1 lecture and 6 laboratory hours. 3 credits. Physical dysfunctions prevalent in the infancy through childhood age span will be identified. The function of occupational therapy assessment and intervention as a multi-variant approach in medical, educational, and com-

munity settings will be explored. Level-one fieldwork will be assigned as a portion of this course.

306 Physical Dysfunction and Occupational Therapy II. Semester course; 2 lecture and 3 laboratory hours. 3 credits. Physical disabilities prevalent during adolescence will be examined. Detailed study of the role of the occupational therapist in evaluating and treating the special needs for this age group will be emphasized.

307 Psychosocial Dysfunction and Occupational Therapy I. Semester course; 1 lecture and 6 laboratory hours. 3 credits. Psychosocial stresses and pathologies which cause dysfunction during infancy through childhood will be the focus of this course. The roles and functions of occupational therapy in medical, educational, and community settings will be identified. Level-one fieldwork will be assigned as a portion of this course.

308 Psychosocial Dysfunction and Occupational Therapy II. Semester course; 1 lecture and 6 laboratory hours. 3 credits. This course will focus on common psychiatric disorders of adolescence and young adulthood followed by review of concepts and techniques of occupational therapy evaluation and intervention. Assigned level-one fieldwork will be included.

309 Skills Laboratory I. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Introduction to use of activity for evaluation and treatment. Emphasis is placed on activity analysis and adaptation of various therapeutic media.

310 Skills Laboratory II. Semester course; 1 lecture and 2 laboratory hours. 2 credits. Three units of instruction: woodworking—use of hand and power tools, construction and finishing techniques, and their therapeutic application; ceramics—use of various non-wheel ceramic techniques and their therapeutic applications; and weaving—use of four harness looms and their therapeutic applications.

403 Developmental Tasks and Occupational Roles III. Semester course; 1 lecture and 3 laboratory hours. 2 credits. A study of adult ontogenesis and developmental tasks as they interrelate with adult occupational patterns. The course will examine work, productivity, leisure, retirement, and recreation in the adult years with emphasis on the importance of occupational success and balance for adaptation in adulthood and old age.

405 Physical Dysfunction and Occupational Therapy III. Semester course; 3 lecture and 6 laboratory hours. 5 credits. Dysfunction as the result of physical disabilities which commonly occur during the adult years will be analyzed. Specific disabilities will be identified and discussed. The theory and practice of occupational therapy intervention in a variety of settings will be presented. Level-one fieldwork will be assigned as a portion of this course.

407 Psychosocial Dysfunction and Occupational Therapy III. Semester course; 3 lecture and 6 laboratory hours. 5 credits. This course will focus on common psychiatric disorders of middle adulthood through old age, followed by review of concepts and techniques of occupational therapy evaluation and intervention. Assigned level-one fieldwork will be included.

409 Skills Laboratory III. Semester course; 5 laboratory hours. 2 credits. Three units of instruction which orient the student to the nature of work, work evaluation, and adjustment; activities of daily living and adaptive devices; and life skills.

411 Theories of Occupational Therapy. Semester course; 2 lecture hours. 2 credits. Examines theoretical constructs which are used in various models of occupational therapy practice. Concepts integral to understanding and using human occupation as a basis for practice are emphasized. Current issues in practice are explored.

412 Administration and Supervision of Occupational Therapy Services. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Covers the management of human and nonhuman resources to provide efficient and effective occupational therapy services; the nature of formal and informal organizations, the administrative process, and administrative tasks. Includes supervision, consultation, and the planning of occupational therapy fieldwork education.

414 Research Methods in Occupational Therapy. Semester course; 3 lecture hours. 3 credits. Covers the steps in the research process: problem definition, literature review, research design and data collection appropriate for occupational therapy, data analysis and interpretation, and research reporting. Emphasizes action research, evaluation research, and development of a research proposal.

418 Occupational Therapy in Health Care. Semester course; 3 lecture hours. 3 credits. This course will cover the impact and relationship of the following to occupational therapy: patterns of health care in the United States and abroad, current issues affecting the delivery of health care, and the allied health professions. The student will learn to analyze community health resources in terms of organizational structure, funding, purposes of services, and client eligibility and accessibility. The influence of these components on occupational therapy services will be stressed.

491 Special Topics in Occupational Therapy. Semester course; 3 credits. Designed around the interests of students, faculty expertise, and availability and expertise of Richmond area occupational therapists or visiting lecturers. Format may include intensive minicourses or workshops, an advanced course, with some knowledge and skills in a specialized area of occupational therapy.

493 Fieldwork—Psychosocial. Semester course; 1–9 credits.

494 Fieldwork—Physical Dysfunction. Semester course; 1–9 credits.

495 Fieldwork—Specialty. (Optional). 1–9 credits.

Minimum total required for all fieldwork courses, 18 semester hours. Determination of the amount of credit and permission of the instructor and department chairman must be secured prior to registration for the course.

Supervised fieldwork experiences are arranged in various settings for the application of academically acquired knowledge. Placements will include experiences in prevention, health maintenance, remediation, daily life tasks, and vocational adjustment. Fieldwork settings may include hospitals, rehabilitation centers, school systems, community agencies, penal systems, etc.

Fieldwork experiences are arranged individually, but placement in a specified location cannot be guaranteed. A minimum total of 24 weeks is required. Twelve weeks of this must be spent on a full-time basis. When equivalent time is used, the experience will be appropriate to the learning needs of the student and will meet the stated objectives of the field experience.

When the fieldwork extends beyond a grading period, an interim grade of "PR" will be assigned. In the event of failure, the course may be repeated only upon recommendation by the academic and clinical faculty.

Fieldwork must be completed no later than 24 months following completion of the academic phase.

GRADUATE COURSES (OCT)

501 Basic Treatment Concepts and Skills. Semester course; 1 lecture and 2–4 laboratory hours. 3 credits. Introduces important occupational therapy concepts: the influence of activity on health, the basic occupational therapy process, evaluation, motivation, and learning. Develops skill in observation and interviewing as data-gathering methods.

503 Occupational Life Roles and Tasks I. Semester course; 1 lecture and 3 laboratory hours. 2 credits. A study of growth and developmental processes and influences from infancy through adolescence, with primary focus on life roles and occupational performance skills related to self-help tasks, play/leisure tasks, and school/work tasks.

504 Occupational Life Roles and Tasks II. Semester course; 2 laboratory hours. 1 credit. This course will examine the development of occupational behavior in the adult portion of the life span. It draws upon concepts of time, role, habits, interest, and values to examine how the normal adult proceeds through occupational choice, worker roles, and retirement. The course also examines the balance of work and play and its change in normal development. Finally, the course will examine the effects and interrelationships of disability with normal occupational development in adulthood.

505 Physical Dysfunction and Occupational Therapy Intervention I. Semester course; 3 lecture and 6 laboratory hours. 5 credits. The focus of this course will be to identify and describe physical dysfunction seen in the continuum of health care in medical, educational, and community settings. A wide variety of evaluative and therapeutic approaches will be explored for the age range of infancy through adolescence. Assigned level-one fieldwork will be part of the course.

506 Physical Dysfunction and Occupational Therapy Intervention II. Semester course; 3 lecture and 6 laboratory hours. 5 credits. Beginning with the early adult years and continuing through the rest of the life span, the emphasis of this course will be twofold: (1) To identify and describe physically disabling conditions (acute and chronic) which interrupt occupational development and function during this age range; and (2) to apply the theories and principles of occupational therapy to the evaluation and treatment of physically disabled persons (acute and chronic) during this age range. Assigned level-one fieldwork will be part of this course.

507 Psychosocial Dysfunction and Occupational Therapy Intervention I. Semester course; 3 lecture and 6 laboratory hours. 5 credits. This course will focus on psychosocial pathologies which occur within the infancy through adolescence age span (including specific learning disabilities, mental retardation, and other diagnostic classifications). Theories and principles of occupational therapy intervention useful in medical, educational, and community settings will be explored. Assigned level-one fieldwork will be part of the course.

508 Psychosocial Dysfunction and Occupational Therapy Intervention II. Semester course; 3 lecture and 6 laboratory hours. 5 credits. This course will introduce common psychiatric disorders of young, middle, and older adults followed by review of theoretical frames of reference and related occupational therapy evaluation and intervention methods. Assigned level-one fieldwork will be included.

509–510 Activity Theory and Skills I and II. Semester course; 1 lecture and 2 laboratory hours. 2, 2 credits. Analysis of student's activity skills in areas of play/leisure, self-care, homemaking, and work and development of skill in performing selected activities, including splintmaking. Emphasizes teaching, analysis, and therapeutic application of activities. Also stressed are evaluation and development of client's work, homemaking, and daily living skills.

BIO 525 Advanced Functional Anatomy. Semester course; 3 lecture and 4 laboratory hours. 5 credits. Prerequisite: BIO 205 or equivalent. A study of the anatomy and kinesiology of the human body using prosected specimens and the dissected cadaver. Particular emphasis is placed upon the study of the extremities. Intended primarily for students in the Department of Occupational Therapy.

BIO 529 Advanced Functional Neuroanatomy. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: BIO 305 or permission of instructor. A study of the morphology and functional aspects of the central and peripheral nervous systems of the human body.

601 Advanced Theoretical Concepts in Occupational Therapy. Semester course; 3 lecture hours. 3 credits. Prerequisites: OCT 312, 501, or student must be a registered occupational therapist. This course offers an advanced conceptualization of a generic theory base for occupational therapy. The course includes examination of the nature and organization of scientific knowledge, the medical model and other models of health care, sociological features of occupational therapy practice, and the study of human occupation and its disruption in illness.

602 Research Methods in Occupational Therapy. Semester course; 3 lecture hours. 3 credits. Covers the steps in the research process: problem definition, literature review, research design and data collection appropriate to occupational therapy, data analysis and interpretation, and research reporting. Emphasizes action research, evaluation research, and the preparation of a proposal for a thesis or project. Students with prior course work or experience in research may be permitted to take an elective instead of this course.

603 Administration and Supervision of Occupational Therapy Services. Semester course; 2 lecture and 2 laboratory hours. 3 credits. The management of human and nonhuman resources in the provision of efficient and effective occupational therapy services; the nature of formal and informal organizations, the administrative process, and administrative tasks. Includes supervision, consultation, and the planning of occupational therapy fieldwork education.

604 Theoretical and Therapeutic Application of Play in Occupational Therapy. Semester course; 3 lecture hours. 3 credits. This course begins with a broad coverage of theory related to the motivation for play, the form and content of play, its developmental nature, and its relationship to health and adaptation. Following this theoretical introduction, the course focuses on practical application of play in occupa-

tional therapy (i.e., evaluating play behavior and remedial play dysfunction).

605 Influences on Health and Health Care. Semester course; 3 lecture hours. 3 credits. The nature of health, illness, and disability; the sick role; relationship between occupational therapy and the health care system; and current professional issues in occupational therapy.

612 Occupational Therapy Assessment. Semester course; 1–3 credits. Introduction to the theory of measurement. Selection, administration, and reporting of formal and informal assessments useful in occupational therapy. Processes of standardizing occupational therapy assessments.

654 Occupational Therapy and Upper Extremity Dysfunction. Semester course. 3 credits. Prerequisites: Hand management or post-professional master's degree matriculant or permission of instructor. Examines the occupational therapist's role in serving those with upper extremity dysfunction in the areas of work, leisure, and activities of daily living.

690 Occupational Therapy Seminar. Variable credits 1–3, may be requested for a maximum of 4 credits. Investigation, presentation, and discussion of current problems and issues in the field of occupational therapy.

691 Special Topics in Occupational Therapy. Semester course; 3 credits. Designed around the interests of students, faculty expertise, and availability and expertise of Richmond area occupational therapists or visiting lecturers. Format may include intensive minicourses or workshops, an advanced course, with some opportunity for election and development of knowledge and skills in a specialized area of occupational therapy.

693 Fieldwork—Psychosocial Dysfunction. 9 credits.

694 Fieldwork—Physical Dysfunction. 9 credits.

695 Fieldwork—Specialty (Optional). 6–9 credits.

Minimum total required for all fieldwork courses, 18 semester hours. Determination of the amount of credit and permission of the instructor and department chairman must be secured prior to registration for the course.

Supervised fieldwork experiences are arranged in various settings for the application of academically acquired knowledge. Placements include experiences in prevention, health maintenance, remediation, daily life tasks, and vocational adjustment. Fieldwork settings may include hospitals, rehabilitation centers, school systems, community agencies, camping programs, penal systems, and the like. Fieldwork experiences are arranged individually, but placement in a specified location cannot be guaranteed.

In the event of failure, the course may be repeated only upon recommendation by the academic and clinical faculty. Fieldwork must be completed no later than 24 months following completion of the academic phase.

697 Independent Study. 1–3 credits. This student will submit a proposal for investigating some area or problem in occupational therapy not ordinarily included in the regular curriculum. Student's topics of desired study must be identified with a contact from the student and approved by the faculty member. The results of the study will be presented in written or oral report.

698 Research in Occupational Therapy. Semester course; 3 credits. Completion of a department proposal for a research

project relevant to occupational therapy.

699 Research in Occupational Therapy. Semester course; 3 credits. Completion of a research project relevant to occupational therapy.

793 Clinical Specialty Practicum. 1–4 credits. 3–9 hours of clinical experience in the student's chosen area of specialization under the supervision of an experienced clinician (minimum 3 hours per week for each clinical credit). Except for students in the hand management concentration track, requires registration for 1 credit hour for guided library research and preparation of a paper examining the theoretical and empirical basis of an aspect of practice in the specialty area. Requires contract prepared by the student and approved by a faculty advisor and clinical supervisor.

798 Thesis. 3–6 credits. Completion of a departmental proposal for a master's degree thesis relevant to occupational therapy.

799 Thesis. 3–6 credits. Completion of a master's degree thesis relevant to occupational therapy.

Program of Patient Counseling

HISTORY

Patient counseling is a relatively new title for the practice of communicating empathic concern, support, and sensitive counsel to the physically or emotionally troubled person and assistance through the traumas of life. There is a long history of a concerted effort toward this end at the MCV Hospitals of VCU. With the appointment of the Reverend Dr. George D. Ossman as chaplain in 1943, the administration gave clear evidence of its awareness of the need for a specialized caring ministry to hospitalized patients and their families. The chaplaincy program was significantly expanded in 1958 and was certified to begin training clergy in the area of pastoral counseling of troubled persons. Since then, a continuous certificate-awarding, accredited program has been in existence and has evolved into the present program in patient counseling. Patient counseling, as it exists today, became an integrated program in the School of Allied Health Professions in 1970.

PHILOSOPHY

With the rapid growth of health care and the increasingly complex problems of medical ethics and viable delivery systems, it is very important to educate qualified persons to deal with the human dimensions of illness and the personal and family stress related to it. Through this program, VCU has an opportunity to make a needed impact upon health education in terms of emphasizing the human needs related to crises of

living. By so doing, the University has a significant role to play in the important task of keeping health care human and utilizing technical and scientific methodology in the context of a deep respect for the total life of persons under stress.

OBJECTIVES

The Program of Patient Counseling is designed to assist an individual to work in the health field as one skilled in dealing with the whole person in the context of life's crises and in a cooperative interprofessional team approach. The program is offered to persons who have an existing identity in a helping or counseling profession. This includes clergy, social workers, institutional counselors, education specialists, psychologists, community health workers, and others in various aspects of the health professions. Basically, the program is designed to educate persons in understanding and counseling those who are involved in crisis situations such as illness, impending death, injury, emotional collapse, family adjustment to health crisis or loss, unwanted pregnancy, and other such life crises.

FUTURE PLANS

A master's degree with a major in health and crisis-related personal and family counseling, emphasizing the practical and clinical competence of such counseling, is in the planning stages.

FACILITIES

Newton House is the base for the educational program, and limited space is available in clinical areas to work with individuals and families in crisis. The Main Hospital, mezzanine level, contains the chapel and the clinical offices.

ACCREDITATION

The program is accredited by the Association for Clinical Pastoral Education, Incorporated, through the Virginia Cluster for Pastoral Education. Resident II students who have demonstrated competency in supervision and counseling are encouraged to present themselves for certification with the ACPE.

CODE OF ETHICS

The professional behavior of the student is expected to be in accordance with the Code of

Professional Ethics, as adopted by the Association for Clinical Pastoral Education (Standards, 1987), the American Association of Pastoral Counselors, and the College of Chaplains, APHA in October 1986 (excluding Principle IV). These codes may be found in the offices of the faculty.

PROGRAMS

Students and residents serve in the dual capacity of providing service while learning. Classes are primarily patient oriented, with actual patient contact as the learning vehicle. Didactic classes are coordinated with the entire learning process. Night duty and weekend duty in rotation are required of all students in the program. Each student receives weekly individual supervision by a member of the faculty.

Several courses are offered for individuals at different levels of experience and training:

1. (a) Part-time programs are available for local students who wish to commute. This requires two days per week (plus overnights) for 16 weeks. These programs are offered twice per academic year, in the fall and spring semesters.

(b) One day per week for both semesters.

2. A cooperative program with the School of Theology, Virginia Union University, is offered for senior students in the fall and spring.

3. A course for 11 weeks in the summer session is full-time and available to post-graduate students.

4. A Residency I-level year is available to four mature, experienced applicants.

5. A Residency II-level year is available to two selected applicants in advanced training.

6. One senior resident, Residency III, functions administratively as a departmental assistant and teaching fellow and is chosen for current advanced residents.

Residents receive stipends for services rendered. Information about stipends may be secured by contacting the admissions chairman.

ADMISSION REQUIREMENTS

1. Fall and spring semester programs: B.A. or its equivalent or B.D., M.Div., M.A., Ph.D., or equivalent. Professional standing in the community. Personal interview with a member of the supervisory staff.
2. Summer session (11 weeks): B.A. or its equivalent. Enrollment in an accredited graduate school or its equivalent, or demonstration of professional competence.

Personal interview with representative of the program.

3. Residency I: M.Div., M.A., Ph.D., or equivalent. Recognition in the professional community. Demonstration of personal maturity. Personal interview with supervisory staff.

4. Residency II: M.Div., M.A., Ph.D., or equivalent. Professional standing in the community. Two to five years experience in chosen profession. An expressed interest in pursuing the supervisory training process. Demonstration of personal psychotherapeutic or counseling experience. Intern year in an accredited center. Personal interview with supervisory staff.

5. Residency III: All of Residency II requirements, plus at least one year of training in the VCU-MCV Patient Counseling Program.

PATIENT COUNSELING CURRICULUM

		Semester Hours		
<i>Residency I</i>		<i>fall spring summer</i>		
PAC 551-552	Selected Issues in Health Care I and II	1	1	—
PAC 553	Professional Identity, Function, and Ethics I	2	—	—
PAC 554	Professional Identity, Function, and Ethics II	—	2	—
PAC 555	Theory and Practice of Patient Counseling I	3	—	—
PAC 556	Theory and Practice of Patient Counseling II	—	3	—
PAC 593-594	Supervised Clinical Practicum I and II	4	4	—
PAC 561-562	Group Process I and II	2	2	—
PAC 597	Clinical Research ...	—	—	3
PAC 595	Supervised Clinical Practicum III	—	—	5
PAC 596	Practicum in Group Process	—	—	2
PAC 592	Independent Study	—	—	2
		12	12	12

FACULTY

Professor: Prest (Chairman)
Associate Professors: Mauney; Young
Instructor: Cain
Clinical Instructor: Snorton
Lecturers: Arnold; Oglesby

COURSES OF INSTRUCTION (PAC)

The Program of Patient Counseling has an integrated curriculum in which the summer basic intern- and residency-level students experience their core courses as a group. Exceptions to this rule are by faculty invitation only. Admission to any of the courses below is upon approval of the instructor. Students must be able to demonstrate competence in patient care.

PAC 551-552 Selected Issues in Health Care. Semester course; 1 lecture hour. 1 credit. Presents theory, research, and technique in specialized topics of current interest. Offered full and spring semesters. Undergraduate credit is given to those persons who do not hold baccalaureate degrees.

PAC 553 Professional Identity, Function, and Ethics I. Semester course; 2 lecture hours. 2 credits. Examines religious rituals appropriate for life's crisis points, such as illness, loss, guilt, birth, death, and marriage from the perspective of professional identity and functioning.

PAC 554 Professional Identity, Function, and Ethics II. Semester course; 2 lecture hours. 2 credits. Examines professional identity developmentally and conceptually. Presents and critiques key professional ethical issues, such as confidentiality, abortion, euthanasia, and patient rights.

PAC 555 Theory and Practice of Patient Counseling I. Semester course; 3 lecture hours. 3 credits. Emphasizes the role of the patient counselor, theological foundations, death and dying, and ministry to the poor and aging.

PAC 556 Theory and Practice of Patient Counseling II. Semester course; 3 lecture hours. 3 credits. Emphasizes psychological foundations of pastoral care and counseling, crisis intervention, human sexuality, marriage and family counseling, and pastoral counseling with addicts.

PAC 561-562 Group Process I and II. Continuous course; 2 lecture hours. 2 credits. Explores in small group settings, techniques and procedures common to group behavior and encourages relational skills and techniques.

PAC 593-594 Supervised Clinical Practicum I and II. Continuous course; 4 lecture and 14 clinical hours. 4 credits. Provides the opportunity to apply and practice interview and therapeutic skills with patients and their families under faculty supervision in selected areas of the hospital. Provides individual faculty supervision and critical review in seminars.

PAC 595 Supervised Clinical Practicum III. Semester course; 3 lecture and 7 clinical hours. 5 credits. Emphasizes the clinical aspect of students' research projects.

Residency II

Required

PAC 551-552	Selected Issues in Health Care I and II	1	1	—
PAC 607-608	Advanced Group Process: I and II ...	2	2	
PAC 611-612	Clinical Pastoral			

	Supervision: I and II	4	4	
PAC 697	Clinical Practicum in Research			3
PAC 691	Pastoral Counseling Practicum			5
PAC 693	Group Process Practicum	—		2
PAC 592	Independent Study			2

Elective

PAC 603-604	Patient Counseling Evaluation I and II	5		
PAC 605-606	Pastoral Counseling Theory and Practice: I and II		5	
		12	12	12

Residency III

PAC 551-552	Selected Issues in Health Care: I and II	1	1	
PAC 607-608	Group Process	1	1	
PAC 694-695	Advanced Clinical Pastoral Supervision I and II	7	7	—
PAC 685-686	Supervised Pastoral Counseling Practicum I and II	3	3	—
PAC 696	Supervision Practicum	—	—	9
PAC 592	Independent Study			3
		12	12	12

Summer Intern Basic Program

PAC 500	Selected Issues in Health Care	1
PAC 515	Basic Clinical Patient Counseling	7
PAC 520	Use of Religious Resources in Patient Care	2
PAC 530	Introduction to Group Process	2
		12

COURSES OF INSTRUCTION

PAC 596 Practicum in Group Process. Semester course; 2 lecture hours. 2 credits. Continues PAC 561-562.

PAC 597 Clinical Research. Semester course; 1 lecture and 8 clinical hours. 3 credits. Completes an original project using the clinical areas of the hospital and presents this to the department.

Residency II

PAC 603-604 Patient Counseling Evaluation I and II. Continuous course; 4 lecture and 20 clinical hours. 5 credits. Evaluates the developing counseling ability in various patient care situations and enhances the competence level. Evaluates patient counseling techniques and skills in patient care situations through case studies.

PAC 605-606 Pastoral Counseling Theory and Practice I and II. Continuous course; 8 lecture and 6 clinical hours. 5

credits. Explores issues and dynamics developed in the counseling relationship and involves critiques of two on-going counseling relationships.

PAC 607-608 Advanced Group Process I and II. Continuous course; 2 lecture hours. 2 credits. Utilizes small group interaction as a vehicle for learning relational skills and techniques.

PAC 611-612 Clinical Pastoral Supervision I and II. Continuous course; 4 lecture hours; 4 credits. Utilizes experiences of supervision and the literature in clinical supervision for those whose goal is to become certified as supervisors in clinical pastoral education.

PAC 691 Pastoral Counseling Practicum. Semester course; 2 lecture and 4 clinical hours. 5 credits. Prerequisite: PAC 605-606. Emphasizes increased competency in counseling through the use of audio and video tapes.

PAC 693 Group Process Practicum. Semester course; 2 clinical hours. 2 credits. Prerequisite: PAC 607-608. Utilizes a small, interactive group to experience group dynamics.

PAC 697 Clinical Practicum in Research. Semester course; 1 lecture hour and 8 clinical hours. 3 credits. Studies an area of specialty within the hospital and develops a competency in that specialty through original research and supervision.

Residency III

PAC 685-686 Supervised Pastoral Counseling Practicum I and II. Continuous course; 4 lecture and 6 clinical hours. 3 credits. Prerequisite: PAC 605-606. Emphasizes the student's growing identity and competence as a counselor.

PAC 694-695 Advanced Clinical Pastoral Supervision I and II. Continuous course; 2 lecture and 15 clinical hours. 7 credits. Critiques the supervision of beginning students. Emphasizes gaining skill in the theory and practice of supervision, developing, and administering an educational program; integrating an understanding of the person as seen from the various helping disciplines, and developing skill in group functioning and leadership.

PAC 696 Supervision Practicum. Semester course; 30 clinical hours. 9 credits. Provides opportunity under supervision for designing and conducting a clinical educational curriculum for basic students in patient counseling. Provides careful supervision and evaluation.

Summer Basic Program

PAC 500 Selected Topics in Health Care. Semester course; 1 credit. Presents to the beginning students a variety of selected topics designed to help them understand the various forces at work in health care and the resources that are available.

PAC 515 Basic Clinical Patient Counseling. 7 credits. Assigns the student to selected areas of the hospital to practice and develop relational skills with patients and their families as they adjust to the hospital situation: presents this work for peer and individual supervision.

PAC 520 Use of Religious Resources in Patient Care. Semester course; 2 credits. Covers religious rituals, methodology of usage, and philosophical and theological issues. Focuses on clinical material presented by students.

PAC 530 Introduction to Group Process. Semester course; 2 credits. Explores in a small group techniques, procedures, and relational skills common to group behavior.

PAC 540 Foundation of the Person. Semester course; 2 lecture hours. 1 credit. Provides a comparative look at theological and behavioral understandings of the person, with particular emphasis given to implications for health and illness.

Courses Offered to Part-time Students

PAC 510 Introduction to Patient Counseling. Semester course; Variable credits. 2-5 hours. Provides an opportunity to practice and develop relational skills with patients and their families as they adjust to the hospital situation and to present this work for supervision and peer feedback in seminars and individual supervision. Offered fall and spring semesters. Special sections are offered to specialized professional groups.

PAC 511 The Professional as Helper. Semester course; 2 lecture hours. 2 credits. Utilizes the student's professional identity as a helping person to identify areas of growth and to develop a model for learning in these areas. Explores current literature in the field and application to the learning areas. Offered fall and spring semesters.

PAC 521 Caregivers of the Dying and their Survivors. Semester course; 3 lecture hours. 3 credits. Provides exposure to the phenomenon of death through literature, lectures, films, and discussions in the context of small group experience.

PAC 551-552 Selected Issues in Health Care. Semester course; 1 lecture hour. 1 credit. Presents theory, research, and techniques in specialized topics of current interest. Offered fall and spring semesters. Undergraduate credit is given to those persons who do not hold baccalaureate degrees.

PAC 592 Independent Study in Patient Counseling. 2-3 hours. Variable credits. Provides opportunity to increase clinical and interpersonal skills in specialty areas through patient care, parallel reading, and individual supervision.

Department of Physical Therapy HISTORY

The Department of Physical Therapy was established in 1945 to provide basic preparation for the practice of physical therapy. Between 1945 and 1954 the program consisted of a 12-month professional course designed to train students for entry into the profession. This program was based upon at least three years of college work or the possession of an R.N. certificate. A two-year professional program after two years of preparatory college work was initiated in 1954. This program leads to the degree of Bachelor of Science in physical therapy. In 1968 the Department of Physical Therapy became part of the School of Allied Health Professions.

In August 1989, the Department of Physical Therapy, School of Allied Health Professions began offering a three-year professional program based on three years of previous college work. This program prepares individuals to enter the physical therapy profession and leads to a Master of Science degree.

In 1946 an advanced graduate program offering the Master of Science degree to physical therapists was established and continued to function until 1952, when it was discontinued. The program was reinstated in 1968 and expanded when a full-time director of graduate studies was appointed in 1971. The current advanced master's degree program offers the opportunity for practicing physical therapists to expand their knowledge and skills in the basic and clinical sciences. In the early 1980s the Departments of Anatomy and Physical Therapy began offering a Ph.D. program for the purpose of developing physical therapy faculty.

PHILOSOPHY OF THE DEPARTMENT OF PHYSICAL THERAPY

Physical therapy is an integral part of the health care system. Expanding knowledge in the basic and clinical sciences and changes in the needs and mandates of society have placed new demands on physical therapists. The faculty of the Department of Physical Therapy is committed to providing an educational program responsive to the needs of society.

The faculty is dedicated to optimal patient care through physical therapy education, research, and practice. The faculty's first obligation is to prepare individuals for general practice and to provide a foundation for further professional growth and specialization. The faculty also is committed to advanced graduate education for physical therapists and to the development of new knowledge in the field of physical therapy through research.

FACILITIES

The educational facilities for the Department of Physical Therapy are located on the second floor of McGuire Hall and McGuire Hall Annex.

These buildings, located on the northwest corner of 12th and Clay Streets, house administrative and faculty offices, classrooms, physical therapy instructional and research laboratories, and student locker rooms and lounge. Classrooms and laboratories in other buildings on the

MCV Campus are used as needed.

Clinical education experiences for professional students are offered in physical therapy clinics throughout Virginia and the nation.

ENTRY-LEVEL PHYSICAL THERAPY PROGRAM

Goals of the Entry-Level Program

The goals of the Entry-Level Physical Therapy Program are to provide an educational program which prepares students to evaluate and manage patients with physical therapy problems effectively and in accordance with ethical principles. The program also provides students with strategies to continually define and meet their own educational needs in order to keep skills and knowledge current throughout their professional careers. Upon completion of the program, students are awarded a Master of Science degree.

Accreditation

The Entry-Level Physical Therapy Program is accredited by the Committee on Accreditation in Education, American Physical Therapy Association.

Honors and Awards

A. D. Williams Awards. These awards, named after a benefactor of the Medical College of Virginia, Virginia Commonwealth University are made to students each year who demonstrate, by virtue of high scholastic attainment and professional performance, unusual promise and ability. Recipients of these cash awards are chosen by the faculty.

Terry Wise Memorial Scholarship. Terry Wise was a 1963 graduate of the MCV physical therapy program who was a respected and well-loved private practitioner in the metropolitan Washington, D.C. area. He died in 1982, and his peers and friends established a scholarship fund in his memory. A scholarship is presented annually to a student who exhibits outstanding professional and personal capabilities during the second professional year. Basic criteria are a grade-point average of 3.0 or higher, good clinical skills, and above all, noteworthy compassion and sensitivity in caring for patients and relating to their families, combined with a commitment to the profession of physical therapy. The recipient of this award is selected by a faculty committee.

Frederick E. Vultee Memorial Award. This award is given in memory of Dr. Frederick E. Vultee who was the medical director of the School of Physical Therapy from 1960 to 1962. The award is presented to a graduating physical therapy student who exhibits outstanding clinical competence, as demonstrated by performance above and beyond normal expectations in a variety of areas. The recipient receives a cash award and a certificate. The faculty selects a recipient annually based on nominations submitted by the clinical faculty.

FINANCIAL ASSISTANCE

A limited amount of financial assistance is available for physical therapy students. The amount of assistance awarded the individual student is based on the availability of funds and the need demonstrated by the student. VCU provides three types of student assistance: scholarships, loans, and campus employment.

For information on financial assistance, write to the Financial Aid Office, Medical College of Virginia, Virginia Commonwealth University, Box 244, Richmond, VA 23298-0244.

GENERAL ACADEMIC POLICIES AND REGULATIONS

The minimum passing grade for all professional courses leading to the Master of Science degree is "C." All courses must be completed with a passing grade for the student to be eligible for promotion or graduation. Satisfactory completion of the previous semester's course work is a prerequisite to the next semester.

Promotion is based on recommendation of the faculty. The student is expected to

1. maintain a grade-point average of 3.0 or better;
2. complete satisfactorily all noncredit courses;
3. obtain a passing grade in all courses;
4. complete clinical education requirements to the satisfaction of the clinical and academic faculty;
5. demonstrate personal characteristics that indicate commitment to the expectations of the profession of physical therapy and the educational program; and
6. pay all fees.

Additional policies and regulations are provided to entering students.

ACADEMIC ADMISSION REQUIREMENTS

Prerequisites for admission to the entry-level physical therapy program include a minimum of 90 semester hours (or 120 quarter hours) in an accredited college or university. A grade of "D" in any required courses is not acceptable. A minimum grade-point average of 2.7 (in a 4.0 system) is required to be considered for admission. Scores from the Graduate Record Exam are required also. This program of study must include a minimum of

1. English—6 semester hours of English. Advanced Placement or CLEP credits may be substituted for up to 3 semester hour credits. Courses in composition or scientific writing are strongly recommended.
2. Biological Sciences—12 semester hours, including laboratory experience. Must include one course in physiology. May include general biology or general zoology. No more than 4 credits in botany may be applied to meet this requirement. Advanced Placement or CLEP credits may not be used to meet these prerequisites.
3. Chemistry—8 semester hours of general chemistry with laboratory. Advanced Placement or CLEP credits may be used to meet these prerequisites.
4. Physics—8 semester hours of general physics, including laboratory experiences. Courses that emphasize mechanics, electricity, heat, and light are recommended highly. Advanced Placement or CLEP credits may be used to meet these prerequisites.
5. Mathematics—3 semester hours in mathematics. These credits must be in college algebra or trigonometry or equivalent. Advanced Placement or CLEP credits may be used to meet these prerequisites.
6. Statistics—3 semester hours in statistics.
7. Psychology—6 semester hours in psychology. Three semester hours must be in general psychology. Advanced Placement or CLEP credits may be used to meet these prerequisites.
8. Social Science—6 semester hours in social sciences, such as sociology, economics, anthropology, history, etc. Advanced Placement or CLEP credits may be used to meet these prerequisites.
9. Humanities—3 semester hours beyond what is listed above.

Approximately 60 of the 90 hours are thus specified. At least 8 hours of electives must be upper-level courses.

In order to complete the social science, psychology, and humanities requirements, students are encouraged to choose courses from the following categories: child, adolescent, or abnormal psychology; personality; development; psychology of adjustment; sociology; anthropology; economics; history; philosophy or logic; counseling; and human relations.

In order to complete the total requirements, students are encouraged to elect courses from the following categories: computer science, embryology, histology, comparative anatomy, vertebrate or human anatomy, kinesiology, physiology, foreign languages, and courses in physical education dealing with an analytical approach to human movement or motor learning.

CURRICULUM PLAN FOR ENTRY-LEVEL MASTER OF SCIENCE DEGREE—FIRST PROFESSIONAL DEGREE

First Professional Year (Senior Year)*

<i>Fall Semester</i>	<i>Semester Credits</i>
PHT 501 Functional Anatomy I	7
PHT 505 Applied Microscopic Anatomy for Physical Therapy	4
PHT 510 Rehabilitation I	3
PIO 461 Mammalian Physiology	3
	17

Spring Semester

PHT 502 Functional Anatomy II	7
PHT 506 Functional Neuroanatomy	5
PHT 537 Rehabilitation II	2
PHT 512 Clinical Problem Solving I	2
	16

Summer Semester

PHT 520 Clinical Education I	3
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*May be extended curriculum, i.e., semesters longer than 15 weeks.

Second Professional Year (G-1)

<i>Fall Semester</i>	<i>Semester Credits</i>
PHT 507 Clinical Biomechanics	3
PHT 533 Physical Agents	3
PHT 539 Neurophysiology of Motor Control	3
PHT 508 Measurement and Assessment	6
PAT 301 Pathology	2
	17

Spring Semester

PHT 540 Neurologic Physical Therapy	6
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PHT 544 Orthotics and Prosthetics	2
PHT 546 Clinical Medicine	2
PHT 531 Scientific Inquiry	2
PHT 548 Orthopedic Physical Therapy	4
PHA 504 Pharmacotherapeutics	1
	17

Summer Semester

PHT 550 Clinical Education II	5
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Third Professional Year (G-2)*

<i>Fall Semester</i>	<i>Semester Credits</i>
PHT 621 Electrophysiological Measurement and Therapeutics	3
PHT 623 Cardiopulmonary Physical Therapy	3
HCM 308 Management in Health Care Facilities	3
PHT 625 Clinical Problem Solving II	1
PHT 627 Geriatric Physical Therapy	2
PHT 631 Professional Issues	3
	15

*During the third professional year, students will complete a terminal project.

Spring Semester

PHT 632 Clinical Education III	8
Total Credits on MCV Campus	98
Prerequisites	90
Credits for M.S. in Physical Therapy	188

The above curriculum plan is under continuous review by the faculty. Course sequencing and titles are subject to change.

For additional information about graduate programs and requirements for promotion and graduation in the Department of Physical Therapy, please consult the *Physical Therapy Entry-Level Student Handbook and Policy and Procedure Manual* and the *VCU Graduate Bulletin*.

ADVANCED GRADUATE PROGRAMS

In addition to the entry-level master's program, the Department of Physical Therapy offers the following advanced graduate programs:

1. Advanced Master of Science Program

Since 1968 the Department of Physical Therapy has offered a variety of programs for physical therapists seeking a Master of Science degree. The faculty of the Department of Physical Therapy continues to be committed to improving physical therapy services through advanced education.

Currently, specialization tracks are offered to meet students' individual needs. In designing these educational experiences, the faculty has

chosen to focus on those areas in which they have expertise. All of the tracks are designed to improve the students' knowledge based on their chosen areas of interest, as well as to help students develop skills in critical thinking and problem solving. The tracks offer course work and practical experiences in adult neurology, general kinesiology and biomechanics, pediatrics, orthopedic rehabilitation, and hand management. The faculty has developed recommended sequences of courses for each of these specialty tracks.

Within each specialty area students enroll in core and elective courses. Students may elect graduate courses given by any University department in addition to courses offered by the physical therapy department. Independent study with faculty members is encouraged also. The completion of a thesis is a requirement for each of the tracks.

2. Doctor of Philosophy Program

The Schools of Basic Health Sciences and Allied Health Professions offer a Ph.D. program in anatomy-physical therapy. This program is planned primarily to prepare individuals to function as physical therapy faculty members.

Further information on these advanced graduate programs, including complete program descriptions and specific admissions requirements, may be obtained by contacting the Department of Physical Therapy, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA 23298-0224.

FACULTY

Professors: Hirt (Emeritus); Jones (Emeritus); Payton
Associate Professors: Lamb (Chairman); Francis; Rothstein
Assistant Professors: Donohue; Lewis; Mayhew; McDonald; Riddle; Robertson
Assistant Clinical Professors: Adler; Breidenbaugh; Kahsar; Majeske; Mangine; Moran; Nuzik; Turocy
Clinical Instructors: Armstrong; Cromwell; Damon; Heckman; Lisle; McNeely; Nice; Olson; Pinter; Rasmussen; Seay; Seldon; Taylor

COURSES IN PHYSICAL THERAPY (PHT)

501-502 Functional Anatomy. Continuous course; 6 lecture and 2 laboratory hours first semester. 4 lecture and 9 laboratory hours second semester. 14 credits. Develops a thorough understanding of fundamental facts and principles that apply to professional practice. Emphasizes the structural and functional anatomy of the musculoskeletal and neuromuscular system. Abnormal functions, as encountered

during clinical practice, are discussed and related to normal structure and function. Students are required to dissect the human body.

505 Applied Microscopic Anatomy for Physical Therapy. Semester course; 4 lecture hours. 4 credits. Examines the basic components of cells in terms of their structure and function. Cells and tissues of greatest importance to physical therapists are studied in detail, and their response to injury is explored. Reviews methods of studying cells.

506 Functional Neuroanatomy. Semester course; 5 lecture hours. 5 credits. Examines the basic structure and function of the nervous system with special emphasis on topics of greatest concern to physical therapists. Uses neurobiological approach to integrate the basic sciences of neuroanatomy, neurophysiology, and clinical neuroscience.

507 Clinical Biomechanics. Semester course; 3 lecture hours. 3 credits. Provides an opportunity to develop knowledge in sufficient depth to understand how selected biomechanical factors influence normal and pathologic human form and movement. Stresses validity and reliability of methods of evaluating musculoskeletal form and function.

508 Measurement and Assessment. Semester course; 4 lecture and 4 laboratory hours. 6 credits. Teaches some of the basic evaluation methods and measurement procedures used by physical therapists in history taking and physical examination. Includes lecture, demonstration, and practice in measurement of the length and girth of body parts, manual and mechanical muscle testing, joint range of motion, accessory motion testing, and palpation. Taught in sequence with PHT 501 Functional Anatomy.

510 Rehabilitation I. Semester course; 2 lecture and 2 laboratory hours. 2 credits. Introduces basic clinical skills and procedures including measurement of vital signs, patient lifting and moving techniques, progressive mobilization, medical asepsis, and principles of bandaging. Introduces record keeping and professional communication.

512 Clinical Problem Solving I. Semester course; 1 lecture and 2 laboratory hours. 2 credits. Presents and provides practice with models of clinical reasoning, communications, and ethical decision making; discusses psychosocial aspects of patient care.

520 Clinical Education I. Semester course; 240 clock hours. 3 credits. Provides full-time clinical experience in health care facilities in Virginia and neighboring states. Introduces students to the professional practice of physical therapy. Includes supervised clinical work with patients, the role of physical therapy in health care systems, and documentation procedures.

531 Scientific Inquiry. Semester course; 2 lecture hours. 2 credits. Provides guidelines for critical analysis of professional literature, for the utilization of research by the physical therapy professional, and for the development of a clinical research project.

533 Physical Agents. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Examines the theory and therapeutic application of massage, hydrotherapy, thermotherapy, ultraviolet, compression, and traction. Emphasizes clinical application and problem solving.

537 Rehabilitation II. Semester course; 1 lecture and 2 laboratory hours. 2 credits. Presents principles of evalua-

tion, goal setting, and program planning for spinal cord injured patients and cancer patients. Provides practice of rehabilitation techniques for severely and chronically disabled patients.

539 Foundations for Neurophysiologic Physical Therapy. Semester course; 3 lecture hours. 3 credits. Covers models of motor control related to the understanding of neurologic dysfunction and neurophysiologic principles for physical therapy.

540 Neurologic Physical Therapy. Semester course; 4 lecture and 4 laboratory hours. 6 credits. Applies principles of life-span motor development, learning, and control to the evaluation and remediation of neuromotor disorders of infants and children. Critically surveys current theory and practice in neuromotor therapeutics for children and adults.

544 Orthotics and Prosthetics. Semester course; 2 lecture hours. 2 credits. Prepares the student to participate as a member of the professional prosthetic or orthotic clinic team; integrates material from other courses; and teaches basic skills in orthotic and prosthetic assessment, prescription, and training and performing initial and final prosthetic and orthotic checkouts.

546 Clinical Medicine. Semester course; 2 lecture hours. 2 credits. Comprehensive course in clinical medicine and sciences relevant to the practice of physical therapy. Medical practitioners from the MCV Campus and surrounding areas participate. Topics include psychiatry, hematology, oncology, dermatology, dentistry, rheumatology, neurology, and burn therapy.

548 Orthopedic Physical Therapy. Semester course; 3 lecture and 2 laboratory hours. 4 credits. Presents principles of evaluation and treatment of patients with musculoskeletal disorders.

550 Clinical Education II. Semester course; 400 clock hours. 5 credits. Provides full-time clinical experience in health care facilities throughout the country. Applies previous clinical and academic learning and provides increased responsibility for patient care in a supervised setting. Requires case study.

601 Electromyographic Kinesiology. Semester course; 2 lecture and 2 laboratory hours. 3 credits. The emphasis of this course is on the theoretical and practical aspects of the use of the electromyograph as a tool to observe human movement, normal and pathologic. The student will have the opportunity to consider the electronic, physiologic, and anatomic principles related to the appropriate selection of electromyographic techniques for the study of movement. Particular emphasis will be placed on data reduction methods and interpretation of data. The student will develop beginning skills in performing the techniques necessary for recording parameters involved in movement.

602 Biomechanics. Semester course; 3 lecture hours. 3 credits. This course covers selected material related to the effects of forces upon normal and pathologic human form and movement. Students have the opportunity to develop an understanding of the basic principles of biomechanics and methods of measurement used in biomechanics so that they can better understand the clinical, academic, and research activities of their specific fields of interest.

605 Foundations for Pathokinesiology. Semester course; 3–4 lecture hours. 3–4 credits. A study of the principles that form a foundation for understanding pathokinesiology and

therapeutic kinesiology. Integration of principles of motor development, control, and learning with emphasis on abnormal motor behavior and its remediation.

606 Therapeutic Kinesiology. Semester course; 1–3 lecture and 3 clinical hours. 2–4 credits. A study of motor behavior in both normal and pathological conditions. Reading and discussion of the basic literature of current neurologic approaches to therapeutic exercise and an integration of these concepts into a comprehensive model of human movement.

607 Principles of Clinical Examination in Orthopedic Physical Therapy. 2 laboratory hours. 1 credit. May be repeated for a maximum of two credits. Principles and technique for evaluation of joint and soft tissue injuries and disabilities with an emphasis on history taking and accessory motion testing.

608 Principles of Orthopedic Physical Therapy. Semester course; 2 lecture hours. 2 credits. A detailed examination of the basic principles and rationale for physical therapy treatment approaches to orthopedic problems. Principles of mobilization will be emphasized.

611 Research Process. Semester course; 2 lecture hours. 2 credits. Readings, discussions, and reports on the current status of professional literature and the validation of clinical practice, clinical administration, and professional education. A model for professional development, the role of research in the validation process, and the basis of research design are presented non-mathematically. Required of all advanced Master of Science degree students unless excused by the faculty.

621 Electrophysiologic Measurements and Therapeutics. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Reviews basic physical principles related to electricity and electronics. Studies physical and physiological effects of electrical currents, their therapeutic indications, and contraindications. Laboratory practice emphasizes the use of electrical currents for physical therapy evaluation and treatment.

623 Cardiopulmonary Physical Therapy. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Applies principles of pathophysiology of the cardiovascular and respiratory systems; includes physical therapy assessment and treatment of patients with cardiac and respiratory disorders.

625 Clinical Problem Solving II. Semester course; 18 clock hours. 1 credit. Students review, integrate, and develop strategies for using previously presented material and present case studies in oral and written forms. Provides a summative learning experience.

627 Geriatric Physical Therapy. Semester course; 2 lecture hours. 2 credits. Discusses the physiological, cognitive, physical, and functional changes due to aging, necessary modifications of physical therapy procedures for geriatric patients, general principles of geriatric rehabilitation, and unique problems associated with physical therapy practice in nursing homes and extended care facilities.

629 Special Topics in Physical Therapy. Semester course; 1 lecture hour. 1 credit. Provides an opportunity to pursue and present a topic of interest that is related to physical therapy evaluation and treatment.

631 Professional Issues in Physical Therapy. Semester course; 3 lecture hours. 3 credits. Discusses professional

issues facing the modern physical therapy practitioner, including ethical principles, practice options, supervision, socioeconomic aspects of physical therapy service, departmental planning, third-party reimbursement, specialization, medical legal aspects of practice, and physical therapy education.

632 Clinical Education III. Semester course; 640 clock hours. 8 credits. Provides full-time work in a minimum of two clinical facilities located throughout the country. Students apply previous course work and demonstrate entry-level competencies by assuming increasing responsibilities for patient care. Students may request assignment to practice settings which meet personal interest and future professional goals.

690 Physical Therapy Seminar. Semester course; 1 lecture hour. 1 credit. Reports on current problems and issues in the field of physical therapy. May be repeated for a maximum of four credits; required of advanced Master of Science degree students for two semesters.

691 Special Topic in Physical Therapy. 1–4 credits. Guided independent study of specific topics not discussed in courses or discussed in less detail in courses. Student's desired topic of study must be identified and approved prior to enrollment.

692 Clinical Specialty Seminar. Semester course; 0.5–3 credits. Individual reports dealing in depth with the history, current status, and problems in a given area of clinical specialization.

693 Clinical Specialty Practicum. 60 clock hours per credit. 1–9 credits. Concentrated clinical experience under the guidance of an approved preceptor.

798 Research in Physical Therapy. 1–15 credits. Research in preparation for the advanced Master of Science degree thesis or doctoral dissertation.

Department of Radiation Sciences

HISTORY

Radiologic technology education began at the Medical College of Virginia in the 1930s with a one-year training program. In 1961 this certificate program became more formalized and was lengthened to two years. The certificate program was discontinued when the last class graduated in 1973.

In 1966 a curriculum leading to an Associate in Science degree was implemented to complement the existing certificate program. Originally a three-year program, it was revised in 1978 to reduce the length to 24 months to make it more consistent with requirements for other associate degrees. This was accomplished by combining liberal arts and professional course work into the two-year period and permits entry of high school graduates directly into the program.

An undergraduate baccalaureate program for radiologic technologists was begun in 1979. The program leading to a Bachelor of Science degree offers concentrations in radiologic technology education, radiology administration, or nuclear medicine technology.

PHILOSOPHY

The faculty of the program of radiologic technology is concerned with maintaining the professional image of the radiologic technologist through high-quality education and concern for the needs of the patient. The department believes that in order to maintain the professional image, they must provide an environment which promotes stimulating intellectual discovery, both academically and clinically. Further, the department believes it is necessary to foster in students an attitude that learning is a lifelong process.

It is essential that students realize that they are responsible for patients and they should attempt to understand both the physical and emotional problems of patients and be inquisitive about and concerned with patients' prescribed treatment.

The faculty continues to grow professionally while maintaining a humanistic attitude which permits individual freedom of expression for both students and faculty, an openness toward change, and mutual respect for all.

OBJECTIVES

1. To provide the student with the opportunity to obtain the knowledge and skills necessary to function as a competent registered radiologic technologist.
2. To provide an educational atmosphere that will engender in the student intellectual curiosity and a desire for lifelong learning and excellence in clinical performance.
3. To strive to maintain an educational environment that keeps abreast of change and new methodology within the fields of radiology and radiologic technology.
4. To provide an atmosphere in which the student develops appreciation for his role as a professional and the associated responsibility for contributing to the advancement of the profession through research, continued education, and active participation in the professional societies.

FACILITIES

The educational facilities for the Department

of Radiation Sciences are located in the west wing of the sixth floor of MCV West Hospital, 1200 East Broad Street. These facilities include a professional library, limited classroom space, and a well-equipped, energized radiographic laboratory with automatic film processing capabilities.

During the various phases of the curriculum, students will be assigned to each of the following affiliate institutions: Medical College of Virginia Hospitals, McGuire Veterans Administration Medical Center, and Chippenham Hospital.

ASSOCIATE IN SCIENCE PROGRAM ACCREDITATION

The program of radiologic technology (Associate in Science degree) is accredited by the Committee on Allied Health Education and Accreditation. Upon completion of the program, the student is eligible for the national certification examination given by the American Registry of Radiologic Technologists.

ADMISSION REQUIREMENTS

Candidates for admission to the program must have completed high school or have passed a GED examination. Transcripts of high school work and Scholastic Aptitude Test (SAT) scores must be submitted with the application. Candidates are encouraged to obtain some hospital experience, either as a volunteer or as an employee. Such experience should preferably be in a department of radiology but may be elsewhere in the hospital.

Applications should be submitted after September 1 and before March 1. Applications submitted after March 1 can be accepted only on a space-available basis. Correspondence should be sent to University Enrollment Services/Admissions, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA 23298-0632.

ACADEMIC REGULATIONS

To continue in the radiologic technology associate degree curriculum, the student is expected to

1. Maintain a minimum semester grade-point and cumulative grade-point average of 2.0;
2. Obtain a passing grade in all required courses and a "C" or better in all radiologic

technology courses indicated with an asterisk in the curriculum outline; and

3. Demonstrate the attitude and skills necessary to function as a radiologic technologist as assessed by academic and clinical faculty.

HONORS AND AWARDS

A. D. Williams Award. This award is given to the student in each class who has achieved the highest cumulative grade-point average.

A. D. Williams Scholarship. This scholarship may be given to a rising sophomore who demonstrates high scholastic attainment, professional clinical performance, and unusual promise as a radiographer.

E. R. Squibb Award. This annual award may be given to a sophomore student and is based on the demonstration of professionalism, competency, and academic achievement. The selection for the award is made by the faculty and students.

Clinical Radiographer Award. This award may be given annually to a sophomore student for outstanding clinical performance and the demonstration of a high standard of professionalism. The selection for this award is based on the votes of clinical radiographers in affiliate hospitals.

CURRICULUM²

<i>First Year</i>		<i>Semester Hours</i>	
		<i>fall</i>	<i>spring</i>
ENG 101	Composition and Rhetoric	3	
ENG 102	Composition and Rhetoric		3
BIO 109	General Biology	4	
BIO 205	Basic Human Anatomy		4
*RTE 101	Radiographic Procedures I	4	
*RTE 103	Principles of Radiographic Exposure I	2	
*RTE 104	Principles of Radiographic Exposure II		4
*RTE 105	Patient Care and Ethics	3	
*RTE 194	Clinical Education I		3
MAT 100	College Algebra		3
		16	17

Summer Session

BIO 206	Human Physiology	4
*RTE 196	Clinical Education II	5
RTE 291	Directed Study: Radiography	2
		11

²Refer to *Virginia Commonwealth University Undergraduate Bulletin* for descriptions of courses in ENG, BIO, MAT, and PSY.

		Semester Hours	
		fall	spring
<i>Second Year</i>			
PHY 101	Foundations of Physics	3	
PHY 102	Frontiers of Physics		3
*RTE 201	Radiographic Procedures II	4	
RTE 203	Medical and Surgical Diseases I	2	
RTE 204	Medical and Surgical Diseases II		2
RTE 213	Advanced Radiographic Imaging		3
*RTE 293	Clinical Education III	5	
*RTE 294	Clinical Education IV		5
*RTE 208	Radiation Safety		2
PSY 101	General Psychology	3	
		17	15
<i>Summer Session</i>			
*RTE 207	Radiographic Physics	3	
*RTE 211	Radiographic Procedures III	1	
*RTE 295	Clinical Education V	5	
RTE 296	Special Topics	2	
		11	

*See Academic Regulations described in this section.

BACHELOR OF SCIENCE PROGRAM

The Department of Radiation Sciences offers a program leading to the Bachelor of Science degree, with an area of concentration in education, administration, or nuclear medicine technology. The concentrations in education and administration are designed to provide advanced theoretical and practical education for the individual who wants to become an educator in radiologic technology or an administrator in a radiology department. The core curriculum consists of professional courses offered within the department. Additional course requirements in the area of concentration are offered in other departments of the University.

In an effort to provide upward career mobility to radiographers through advanced education and specialization and to meet manpower needs for nuclear medicine technologists, the department also offers nuclear medicine technology as an area of concentration within the baccalaureate curriculum. The curriculum includes core courses within the department and academic and clinical work in the area of specialization.

PHILOSOPHY

The faculty of the Department of Radiation Sciences is concerned with keeping pace with the rapidly growing and widely diversified field of radiologic technology. There have been increased demands for people qualified to fill responsible positions in this area of health care.

A baccalaureate degree is now required for those desiring a teaching position in the field. The administration of a radiological facility has become so complex that even small institutions are in need of educated individuals who are prepared to assume this responsibility. The Department of Radiation Sciences recognizes and attempts to meet that need by providing both an educational and an administrative track leading to the Bachelor of Science degree in clinical radiation sciences. The nuclear medicine concentration is designed to prepare technologists for a field which is rapidly expanding and becoming increasingly sophisticated. Every effort is made to provide the student with a varied environment in keeping with the effective instruction that a large university offers.

OBJECTIVES

1. To provide the student with an opportunity for career development and advancement as a radiologic technology educator, administrator, or a nuclear medicine technologist.
2. To help meet growing manpower needs for competent individuals to provide education and administration in the field of radiologic technology.
3. To provide an atmosphere in which the student can develop to the fullest capacity as a radiologic technology professional.
4. To promote learning as a lifelong endeavor and to encourage continued professional growth through research, continued education, and active participation in professional societies.

ADMISSION REQUIREMENTS

Candidates for admission to the upper-division program must meet one of the following requirements:

- A. Be a registered or registry-eligible radiologic technologist (A.R.R.T.) AND possess an associate degree from an accredited college or university;
- or
- B. Be a registered or registry-eligible radiologic technologist (A.R.R.T.) AND have successfully completed ("C" grade or better) three semester hours of college algebra or equivalent and three semester hours of basic college English.
- or

C. THIS OPTION IS AVAILABLE *ONLY* TO NUCLEAR MEDICINE TECHNOLOGY APPLICANTS:

Have completed two years of post-secondary education to include:

human anatomy and

physiology 8 semester credits
 general chemistry 8 semester credits
 English composition 6 semester credits
 college algebra 3 semester credits
 general psychology 3 semester credits
 general physics 8 semester credits
 additional course work ... to TOTAL no less than 60 semester credits

A high school transcript, transcripts of all college work and/or radiography training, and a copy of the registry examination report must be submitted with the application.

Students admitted without an associate degree (option "B" under admission requirements), must complete the following liberal arts requirements in addition to their major curriculum:

college algebra 3 semester credits
 English 6 semester credits
 general psychology 3 semester credits
 anatomy/physiology 6 semester credits
 general physics 8 semester credits

Students applying for the nuclear medicine curriculum under Option "A" or "B" above are strongly encouraged to have completed two semesters of general college chemistry prior to admission. If this is not taken prior to admission, the student will be required to complete it as part of the required curriculum.

Students who are admitted as registry-eligible must successfully complete the Registry exam by the end of their second semester to remain enrolled in their program of studies.

Most students will be required to appear for a personal interview as part of the application process. Part of this interview will be a written physics exam. (Information concerning this examination is provided prior to the interview.)

Applications should be submitted after September 1 and preferably before April 1 for maximum consideration. Correspondence should be sent to University Enrollment Services/Admissions, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA 23298-0632.

ACADEMIC REGULATIONS

Requirements for academic promotion:

1. Maintain a grade-point average of 2.0.
2. Have a passing grade in all courses and a "C" or better in all courses marked with an asterisk.
3. Exhibit the attitude and responsibility deemed necessary to function as a professional radiologic technologist in the selected area of concentration.

CURRICULUM³ EDUCATION CONCENTRATION

<i>Junior Year, fall semester</i>	<i>Semester Hours</i>
EDU 300 Foundations of Education	3
CRS 301 Pathophysiology for Radiographers I	1
HCM 300 Health Care Organization and Services	3
CRS 309 Advanced Radiographic Physics ...	4
HCM 301 Aspects of Illness and Disability ...	3
*AHP 351 Learning Theories	3
	17

Junior Year, spring semester

CRS 302 Pathophysiology for Radiographers II	1
PSY 321 Social Psychology	3
PSY 340 Introduction to Helping Relations	3
*ADE 402 How Adults Learn	3
Elective	3
CSC 150 BASIC Computer Concepts	3
	16

Senior Year, fall semester

*AHP 401 Instructional Strategies	3
EDU 407 Educational Media: Utilization	3
SPE 321 Speech for Business and the Professions	3
CRS 411 Theory and Practice of Radiographic Quality Assurance	3
Elective	3
	15

Senior Year, spring semester

*CRS 493 Educational Practicum	6
CRS 412 Radiation Health	3
*AHP 491 Issues in Allied Health Education	3
Elective	3
	15
TOTAL	63

CURRICULUM³ ADMINISTRATION CONCENTRATION

<i>Junior Year, fall semester</i>	<i>Semester Hours</i>
CRS 301 Pathophysiology for Radiographers I	1

³For descriptions of courses in Education (EDU), Business (BUS), Economics (ECO), Psychology (PSY), Computer Science (CSC), and Speech (SPE), see the *Virginia Commonwealth University Undergraduate Bulletin*.

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HCM 300	Health Care Organization and Services	3
CRS 309	Advanced Radiographic Physics ...	4
HCM 308	Fundamentals of Management in Health Care Facilities	3
HCM 301	Aspects of Illness and Disability ...	3
BUS 203	Introduction to Accounting I	3
		17

Junior Year, spring semester

BUS 204	Introduction to Accounting II	3
ECO 203	Introduction to Economics	3
CRS 302	Pathophysiology for Radiographers II	1
BUS 323	Legal Environment of Business	3
†	Computer course	3
	Elective	3
		16

Senior Year, fall semester

HCM 405	Health Law	3
*CRS 405	Applied Radiology Management	3
HCM 406	Personnel Management in Health Care Facilities	3
CRS 411	Theory and Practice of Radiographic Quality Assurance	3
HCM 408	Management in Health Care Facilities	3
		15

Senior Year, spring semester

*CRS 494	Management Practicum	4
CRS 412	Radiation Health	3
†	Computer course	3
	Electives	6
		16
	TOTAL	63

†6 semester hours of computer courses required; may choose from CSC 150, BUS 360, and BUS 361 subject to approval of faculty advisor.

CURRICULUM

NUCLEAR MEDICINE CONCENTRATION

		Semester Hours
Junior Year, fall semester		
HCM 300	Health Care Organization and Services	3
HCM 301	Aspects of Illness and Disability ...	3
	Restricted Elective	3
CRS 303	Orientation to Nuclear Medicine...	2
CRS 309	Advanced Radiographic Physics ...	4
		15

Junior Year, spring semester

CSC 150	BASIC Computer Concepts	3
*CRS 419	Physics for Nuclear Medicine	3
*CRS 312	Nuclear Medicine Instrumentation and Computer Techniques	4
*CRS 394	Clinical Education I	2
	Elective	3
		15

Junior Year, summer semester

*CRS 313	Clinical Nuclear Medicine: Non-imaging Techniques I	3
*CRS 318	Clinical Nuclear Medicine: Imaging Techniques	3
CRS 396	Clinical Education II	5
		11

Senior Year, fall semester

CRS 413	Theory and Practice of Quality Assurance for Nuclear Medicine	3
*CRS 417	Radiopharmaceutical Preparation and Quality Control	3
CRS 497	Senior Nuclear Medicine Project	3
*CRS 495	Clinical Education III	7
		16

Senior Year, spring semester

CRS 304	Pathophysiology for Nuclear Medicine	2
CRS 412	Radiation Health	3
*CRS 491	Senior Seminar: Nuclear Medicine	1
*CRS 496	Clinical Education IV	8
CRS 497	Senior Nuclear Medicine Project ...	3
		14
	TOTAL	71

*See Academic Regulations described in this section.

FACULTY

Professor: Fratkin (Medical Advisor—Radiography)
Associate Professors: Greathouse (Chairman); Tatum (Medical Advisor—Nuclear Medicine)
Assistant Professors: Fauber; Meixner; Wasseen
Affiliate Instructors: Taormina; Williams
Clinical Instructor: Gillon

COURSES OF INSTRUCTION (RTE)

101 Radiographic Procedures I. Semester course; 3 lecture and 3 laboratory hours. 4 credits. A multimedia course combining radiographic anatomy and positioning designed to give the student an opportunity to demonstrate knowledge during a practical examination in the radiographic laboratory. Students will be able to identify various anatomical parts on drawings, human skeletons, and on radiographs. They will also be able to critique their radiographs for accurate demonstration of the anatomy as well as the proper exposure factors used.

103 Principles of Radiographic Exposure I. Semester course; 2 lecture hours. 2 credits. An introductory lecture course covering the basic principles necessary for image production. It is designed to prepare students for more technical aspects of radiography. At the completion of the course, the students should be able to identify the exposure factors and automatic processing techniques utilized in radiographic image formation.

104 Principles of Radiographic Exposure II. Semester course; 3 lecture and 2 laboratory hours. 4 credits. Prerequisite: RTE 103. A combined lecture and laboratory course integrating factors which affect image production. Analysis of variables during the lecture are combined with laboratory exercises to demonstrate radiographic quality. Operation of

radiographic equipment will be introduced with quality control tests.

105 Patient Care and Ethics. Semester course; 3 lecture hours. 3 credits. This course is designed to acquaint students with various aspects of patient care, specifically as it relates to radiographic and other procedures which they will encounter during their professional careers. It is also designed to prepare students to act quickly and effectively in the case of a medical emergency. Additionally, students will gain an understanding of their status as health care professionals.

194 Clinical Education I. Semester course; 240 clinical hours. 3 credits. Prerequisites: RTE 101 and 105. Clinical experience supervised by faculty and staff radiologic technologists. Students gain practical experience in radiographic techniques and positioning for various procedures in routine, emergency, portable, and operating room radiography.

196 Clinical Education II. Semester course; 360 clinical hours. 5 credits. Prerequisite: RTE 194. Supervised clinical experience in general diagnostic radiography by faculty and staff radiologic technologists. Students gain practical experience in radiographic technique and positioning for various procedures in routine, emergency, portable, and operating room radiography.

201 Radiographic Procedures II. Semester course; 4 lecture hours. 4 credits. Prerequisite: RTE 101. Continuation of RTE 101 with emphasis on the anatomy and positioning of the skull and facial bones. Special radiographic procedures performed to visualize the vascular, lymphatic, reproductive, and central nervous systems are discussed in terms of the procedure itself as well as the specialized equipment required and the radiographer's role in the procedure.

203-204 Medical and Surgical Diseases I and II. Continuous course; 2 lecture hours. 2-2 credits. This course is designed to give the student an understanding of the principles of disease and introduction to various conditions of illness involving body systems.

207 Radiographic Physics. Semester course; 3 lecture hours. 3 credits. Prerequisites: PHY 101 and 102. Designed to provide a clear understanding of all sources and uses of medical radiation. Includes the study of radioisotopes, the production of X-rays, the interaction of radioactive material, the units of radioactive exposure and absorbed dose, and the measurement of radiation.

208 Radiation Safety. Semester course; 2 lecture hours. 2 credits. Designed to give a basic understanding of the way in which radiation interacts with the biological system. The student will have a knowledge of the basic radiation protection philosophy and how this philosophy relates to him or her as a professional.

211 Radiographic Procedures III. Semester course; 1 lecture hour. 1 credit. Prerequisites: RTE 101 and 201. Beginning with a review of RTE 101, this course will place emphasis on the additional or specialized positions which may be added to the routine examinations discussed in RTE 101 and 201.

213 Advanced Radiographic Imaging. Semester course; 3 lecture hours. 3 credits. This course focuses on specialized and new imaging modalities and includes discussion of a variety of image enhancement techniques and the operation

of specialized equipment. Students will be introduced to computer usage and its impact on image manipulation. The course will also incorporate a presentation of state of the art technology and current developments.

291 Directed Study: Radiography. Semester course; 2 credits. Prerequisite: permission of department chairman. This course provides an opportunity for individualized research projects, tutorial studies, clinical work, or special studies not available in formal course work.

293, 294, and 295 Clinical Education III, IV, and V. Continuous course; 1,120 clinical hours. 5-5-5 credits. Prerequisite: RTE 196. Clinical experience supervised by faculty and staff technologists. Students gain expertise in all aspects of diagnostic radiography. Course may include elective rotation in sonography, nuclear medicine, radiation therapy, and other specialized radiographic areas.

296 Special Topics: Radiography. Semester course; 2 credits. This course is designed to provide students with an opportunity to synthesize previously learned concepts and to discuss them in light of actual and hypothetical clinical situations. Discussion will also include current issues and problems in the field of radiologic technology.

COURSES OF INSTRUCTION CLINICAL RADIATION SCIENCES (CRS)

301-302 Pathophysiology for Radiographers I and II. Continuous course; 1 lecture hour. 1-1 credits. Prerequisite: RTE 203, 204, or equivalent. This course emphasizes pathology as demonstrated on the radiographic film in order to determine optimal positioning and radiographic techniques. The physiology and pathology which are recorded by the radiographic image and factors which influence the radiologist's diagnosis, therapy, and prognostic impression are also included. This course is taught only in alternate years.

303 Orientation to Nuclear Medicine. Semester course; 1 lecture and 2 clinical hours. 2 credits. This course is designed to acquaint the student with the field of nuclear medicine generally and the Program in Nuclear Medicine Technology specifically. It will also provide an introduction to clinical practice.

304 Pathophysiology for Nuclear Medicine. Semester course; 2 lecture hours. 2 credits. Prerequisite: CRS 313 and CRS 318. This course will examine how various pathophysiologic states of organs or organ systems affect the results of nuclear medicine procedures. Both qualitative and quantitative analysis of imaging procedures are included.

309 Advanced Radiographic Physics. Semester course; 4 lecture hours. 4 credits. Prerequisite: RTE 207 or departmental approval. This course is designed to advance the student's knowledge and understanding in the physical principles of diagnostic radiology. New applications and recent advances in radiation physics will be discussed. The physical principles of specialized imaging modalities, including computerized tomography, sonography, nuclear medicine, and magnetic resonance imaging, will be briefly presented.

312 Nuclear Medicine Instrumentation and Computer Techniques. Semester course; 3 lecture and 2 laboratory hours. 4 credits. Corequisite: CSC 150. This course is designed to introduce students to the electronic principles of

nuclear medicine instrumentation and the principles of operation for equipment which measures and records the interaction of radiation with matter.

313 Clinical Nuclear Medicine: Non-imaging Techniques I. Semester course; 3 lecture hours. 3 credits. Prerequisite: CRS 312. This course is designed to integrate basic anatomy and physiology with non-imaging *in vivo* procedures. The students will become knowledgeable about current radiopharmaceuticals of choice, biorouting of administered radiopharmaceuticals, normal and abnormal test values, and patient or specimen counting techniques.

318 Clinical Nuclear Medicine: Imaging Techniques. Semester course; 3 lecture hours. 3 credits. Prerequisite: CRS 312. This course is designed to integrate basic anatomy, physiology, and instrumental knowledge with imaging procedures. The students will become knowledgeable about current radiopharmaceuticals of choice, biorouting of the administered radiopharmaceutical, accepted patient dosage levels, normal and abnormal test findings, and contraindications for radiopharmaceutical administration.

394–396 Clinical Education I and II. Continuous course; 456 clinical hours. 2–5 credits. Prerequisite: CRS 303 and corequisites CRS 316 and 318. Clinical experience supervised by faculty and staff technologists. Focus of first semester is on observation of clinical nuclear medicine practice; focus for second semester is on attainment of competence in common imaging procedures with introductory work in non-imaging studies.

405 Applied Radiology Management. Semester course; 3 lecture hours. 3 credits. Prerequisites: HCM 308 or BUS 321 and HCM 406. This course will aid the student in relating basic concepts in management to the radiological environment and relationship of the radiological facility to the health care system.

411 Theory and Practice of Radiographic Quality Assurance. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: CRS 309. Lecture and laboratory courses designed to evaluate quality assurance measures in radiology. The course is a theoretical and investigative approach to achieving and maintaining quality control tests of radiographic systems. The student will gain insight into developing quality control in radiographic education and patient care.

412 Radiation Health. Semester course; 3 lecture hours. 3 credits. Prerequisite: CRS 309. An in-depth course designed to integrate the physical aspects of radiation physics with radiobiology to develop an understanding of radiation protection.

413 Theory and Practice of Quality Assurance for Nuclear Medicine. Semester course; 2 lecture, 2 lab hours. 3 credits. Prerequisite: CRS 312. Lecture and laboratory course designed to explore the quality assurance parameters in a nuclear medicine department. Emphasis will be on the performance of tests to assess survey meters, spectrometers, dose calibrators, gamma cameras, and SPECT imaging systems. Additionally, quality assurance will be discussed in terms of radiopharmaceuticals, radioimmunoassay labs, and patient management.

417 Radiopharmaceutical Preparation and Quality Control. Semester course; 2 lecture hours, 2 laboratory hours. 3 credits. Prerequisite: 2 semesters of college chemistry. This course is designed to provide the individual with the technical knowledge necessary for the preparation and quality control of radiopharmaceutical agents for *in vivo* and *in vitro* nuclear medicine studies.

419 Physics for Nuclear Medicine. Semester course; 3 lecture hours. 3 credits. Prerequisite: CRS 310. This course is designed to build upon concepts introduced in RTE 309 and RTE 310 presenting topics of interest to nuclear medicine technologists in greater depth. Will cover special theory of relativity; induced nuclear reactions; nuclide chart; radioactive decay; physical characteristics of alpha and beta particles, gamma rays, and gamma scintillation spectroscopy.

491 Senior Seminar: Nuclear Medicine. Semester course; 1 lecture hour. 1 credit. Prerequisite: senior status. This course is designed to allow the student to integrate the various individual courses into a single perspective on clinical nuclear medicine. The course will present information regarding the specific administrative requirements for the efficient operation of a nuclear medicine department. Additionally, the course will provide students with an appreciation for their responsibilities as health professionals with emphasis on the need for lifelong learning and participation in professional organizations.

493 Educational Practicum in Radiologic Technology. Semester course; 16 clinical hours. 6 credits. Prerequisites: AHP 351 and 401. Supervised teaching practicum for students enrolled in the educational track. The practicum is designed to provide the student with a vehicle to integrate previously learned concepts and apply them in actual classroom and clinical education situations.

494 Management Practicum. Semester course; 16 clinical hours. 4 credits. Prerequisites: CRS 405 and HCM 406 and 408. This course is designed to allow the student to integrate managerial concepts and theory into the organizational environment of a diagnostic radiology department.

495–496 Clinical Education III and IV. Continuous course; 900 clinical hours. 7–8 credits. Prerequisite: CRS 396. The focus of the third semester of clinical education will be on proficiency in imaging procedures and competency in non-imaging procedures. The focus for the fourth and final semester of clinical education will be on the attainment of proficiency in the performance of all imaging and non-imaging procedures. Emphasis will be placed on maximum application of technical knowledge, standards of patient care, and radiation safety considerations. Students will also have an opportunity to observe and assist in auxiliary areas of nuclear medicine, e.g. radiopharmacy laboratory.

497 Senior Nuclear Medicine Project. Semester course; independent study. 3 credits. Prerequisite: senior status. This course is designed to provide the student with an opportunity to explore a particular area of interest in nuclear medicine in more depth than is possible in the regular curriculum. The student will work independently, with faculty advisement, to develop knowledge and/or skill in a specialized area of nuclear medicine.



PART VIII — Board, Administration, and Faculty

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Associate Dean, Graduate Medical Education

Heber H. Newsome, B.S., M.S., M.D.

Associate Dean, Clinical Activities

Hugo R. Seibel, B.S., Ph.D.

Associate Dean, Student Activities

Donald M. Switz, B.A., M.D.

Associate Dean, Ambulatory Services

W. Robert Wright, Jr., B.A.

Associate Dean, Administrative and Medical

School Practice Activities

Reuben B. Young, B.S., M.D.

Associate Dean, Continuing Education

James M. Messmer, B.A., M.D.

Assistant Dean, Admissions

School of Nursing

JoAnne K. Henry, B.S.N., M.A., Ed.D.

Interim Dean

Betsy A. Bampton, B.S., M.S., Ed.D.

Interim Director, Undergraduate Program

Lorna M. Barrell, B.S., M.S., Ph.D.

Interim Director, Graduate Program

Barbara A. Mark, B.S., M.N., Ph.D.

Interim Director, Doctoral Program

School of Pharmacy

John S. Ruggiero, B.S., M.S., Ph.D.

Dean

C. Eugene White, B.S., J.D.

Associate Dean, Students

Graham C. Windridge, Pharm.D., Ph.D.

Associate Dean

Thomas P. Reinders, B.S., Pharm.D.

Assistant Dean, Clinical Affiliations

RESEARCH AND GRADUATE AFFAIRS

William L. Dewey, B.S., M.S., Ph.D.

Associate Provost for Research and Graduate Affairs

Gordon A. Melson, B.S., Ph.D.

Assistant Provost for Research and Graduate Affairs

Sherry T. Sandkam, B.A., M.B.A.

Assistant Dean, School of Graduate Studies

Dean W. Broga, B.S., M.S., Ph.D.

Director, Environmental Health and Safety

Herbert B. Chermiside, B.A., M.A.

Director, Sponsored Programs Administration

UNIVERSITY AND MCV/VCU SERVICES

John Andrako, B.S., M.S., Ph.D.

Director, Health Careers Opportunity Program

Edward F. Ansello, A.B., M.Ed., Ph.D.

Director, Virginia Center on Aging

William A. Bost, B.S., M.A., Ed.D.

Executive Director, University Enrollment Services

Arlick L. Brockwell, A.B., M.Ed.

Director, MCV Gymnasium and Intramural Athletics

164 Board, Administration, and Faculty

Anil Chatterji, B.Sci., M.Sci., M.S.
Director, Academic Computing, MCV Campus

Robert L. Clifton, A.B., M.A., Ed.D.
Dean of Student Affairs, MCV Campus

John G. Corazzini, A.B., M.A., Ph.D.
Director, University Counseling Services

Jennings G. Cox, B.S., M.S., Ph.D.
Coordinator, MCV Campus, University
Counseling Services

Kenneth B. Daub, Jr., B.S.
Director, Student Accounting

John J. Driscoll
Director for Systems, University Enrollment
Services

William H. Duvall, B.A., M.Ed., Ed.D.
Dean of Student Affairs

I. David Goldman, B.A., M.D.
Director, Massey Cancer Center

Harry R. Hester, B.A.
Assistant Dean of Student Affairs and
Coordinator, University Housing

Alfred B. Houghton, B.A., J.D.
Director for Records and Registration, University
Enrollment Services

Paul P. Jez, B.A.
Controller

Betty Anne Johnson, B.A., M.D., Ph.D.
Director, University Student Health Services

William J. Judd, B.S., M.S., Ph.D.
Director, University Library Services

Charles R. Kinder, B.S., M.A., Ph.D.
Director for Financial Aid, University
Enrollment Services

William A. Robertson, Jr., B.S., M.Ed.
Executive Deputy Director, University
Enrollment Services

Thomas L. Tucker, B.S., M.S.
Co-Director, Health Careers Opportunity
Program, MCV Campus

Jon F. Wergin, B.A., M.A., Ph.D.
Interim Director, Center for Educational
Development and Faculty Resources

ADMINISTRATION, MEDICAL COLLEGE OF VIRGINIA HOSPITALS

Carl R. Fischer, B.S., M.S., M.P.H.
Executive Director

Peter F. Rapp, B.A., M.B.A.
Administrator for Operations

Barbara A. Farley, B.S., M.N.
Interim Director, Nursing Services

Jane S. Erdman, B.S., M.H.A.
Director, Support Services

Oswald K. Hale, B.A.
Director, Hospital Personnel

Dominic J. Puleo, B.S.
Director, Finance

W. John Schaeffer, A.B., M.B.A., M.H.A.
Director, Ambulatory Care

Jeffrey N. Yarmel, B.A., M.B.A.
Director, Professional Services

FACULTY

**Faculty listings include appointments made by
the Board of Visitors on May 18, 1990.**

Abbey, Louis M. (1971)¹ *Professor of Oral
Pathology* A.B., 1963, Earlham College;
D.M.D., 1967, M.S., 1971, Tufts University.

Abbott, David M. (1975) *Associate Professor of
Periodontics* B.S., 1968, Madison College;
D.D.S., 1972, University of North Carolina;
M.S.D., 1975, University of Minnesota.

Abd-Elfattah, Anwar S. (1988) *Associate Professor
of Surgery* B.S., 1970, M.S., 1974, Alexandria
University, Egypt; Ph.D., 1979, Mississippi State
University.

Abedi, Shahla (1976) *Associate Professor of
Ophthalmology* M.D., 1970, Tehran University,
Iran.

Abernathy, Glen N., (1990) *Clinical Instructor in
Pharmacy and Pharmaceuticals* B.S., 1971,
Medical College of Virginia of Virginia
Commonwealth University.

Abernathy, Ted R. (1974) *Clinical Instructor in
Pediatrics* B.A., 1964, Virginia Military Institute;
M.D., 1970, Medical College of Virginia of
Virginia Commonwealth University.

Abraham, Donald J. (1988) *Professor and
Chairman, Department of Medicinal Chemistry*
B.S., 1958, Pennsylvania State University; M.S.,
1959, Marshall University; Ph.D., 1963, Purdue
University.

Aceto, Mario D. (1973) *Professor of Pharmacol-
ogy and Toxicology* B.S., 1953, Providence
College; M.S., 1956, University of Maryland;
Ph.D., 1958, University of Connecticut.

Adams, Anne C. (1980) *Associate Clinical
Professor of Restorative Dentistry* B.A., 1967,
Radford College; M.S., 1975, D.D.S., 1979,
Medical College of Virginia of Virginia
Commonwealth University.

Adams, Jonathan D. (1984) *Clinical Instructor in
Pharmacy and Pharmaceuticals* B.S., 1976,
University of Utah; Pharm.D., 1981, University
of Kentucky.

Adams, Robert Crady, Jr. (1978) *Assistant Clinical
Professor of Pharmacy and Pharmaceuticals* B.S.,
1965, University of Tennessee.

Adelaar, Robert E. (1976) *Professor of Surgery*
B.S., 1966, B.A., 1967, Lehigh University; M.D.,
1970, University of Pennsylvania.

Adelman, Burt A. (1984) *Associate Professor of
Internal Medicine* B.S., 1972, Trinity College;
M.D. 1976, Cornell University.

Adkins, Julian (1977) *Instructor in Psychiatry*
B.A., 1949, Randolph-Macon College; M.S.S.W.,
1959, Richmond Professional Institute.

¹Year of first appointment.

- Adkins, William E. (1987) *Clinical Instructor in Obstetrics and Gynecology* A.S., 1974, Tidewater Community College; B.S., 1975, Old Dominion University; M.D., 1979, Eastern Virginia Medical School.
- Adler, Robert A. (1984) *Associate Professor of Internal Medicine* B.A., 1967, M.D., 1970, Johns Hopkins University.
- Adler, Stuart P. (1979) *Professor of Pediatrics and Chairman, Division of Pediatric Infectious Diseases* B.A., 1968, M.D., 1971, Johns Hopkins University.
- Adler, Tracey K. (1985) *Assistant Clinical Professor of Physical Therapy* B.S., 1979, Georgia State University; M.S., 1984, Medical College of Virginia of Virginia Commonwealth University.
- Aghdami, Aliasghar (1973) *Professor of Anesthesiology* M.D., 1957, Tabriz University, Iran.
- Agner, Suzanne I. (1990) *Clinical Instructor in Pharmacy and Pharmaceutics* B.S., 1987, Pharm.D., 1989, University of Georgia.
- Akers, George R. (1975) *Assistant Clinical Professor of Pharmacy and Pharmaceutics* B.S., 1967, Medical College of Virginia.
- Albert, M. Abey (1987) *Assistant Clinical Professor of Anesthesiology* B.S.E., 1977, Duke University; M.E., 1978, University of Virginia; M.D., 1982, Medical College of Virginia of Virginia Commonwealth University.
- Albrecht, G. Thomas, Jr. (1989) *Assistant Clinical Professor of Pediatrics* B.A., 1975, M.D., 1983, University of Virginia.
- Alexander, John M. (1975) *Associate Clinical Professor of Oral and Maxillofacial Surgery* D.D.S., 1966, Medical College of Virginia.
- Ali, M. Karim (1989) *Assistant Professor of Otolaryngology* M.D., 1974, University of Kabul, Afghanistan.
- Ali, M. Moinuddin (1981) *Assistant Professor of Radiation Oncology* M.B., B.S., 1966, Gandhi Medical College, India.
- Allen, Charles R., Jr. (1990) *Clinical Instructor in Pharmacy and Pharmaceutics* B.S., 1981, Medical College of Virginia of Virginia Commonwealth University.
- Allen, Jody H. (1984) *Assistant Clinical Professor of Pharmacy and Pharmaceutics* B.S., 1979, University of North Carolina; Pharm.D., 1981, Medical College of Virginia of Virginia Commonwealth University.
- Allen, Robert H. (1980) *Clinical Instructor in Pharmacy and Pharmaceutics* B.S., 1950, Columbia University.
- Allison, Trenton B. (1983) *Associate Professor of Pathology and Pharmacy and Pharmaceutics* B.S., 1966, Ph.D., 1972, University of Utah.
- Allport, Catherine D. (1986) *Clinical Instructor in Maternal-Child Nursing* B.S., 1964, Medical College of Virginia; M.P.H., 1966, University of North Carolina.
- Al-Mafeen, Cheryl (1989) *Assistant Professor of Psychiatry* B.S., 1981, M.D., 1983, Howard University.
- Alty, Lisa T. (1988) *Affiliate Assistant Professor of Medicinal Chemistry* B.S., 1982, College of William and Mary; Ph.D., 1987, Medical College of Virginia of Virginia Commonwealth University.
- Ames, James E. (1988) *Assistant Clinical Professor of Nursing Administration and Information Systems* B.S., 1973, Hampden-Sydney College; A.M., 1975, Ph.D., 1977, Duke University.
- Anderson, Douglas A. (1987) *Associate Professor of Preventive Medicine* B.A., 1971, Emory University; M.D., 1977, Medical University of South Carolina; M.P.H., 1986, University of South Carolina.
- Anderson, Ralph L. (1981) *Associate Clinical Professor of Orthodontics* B.S., 1960, Virginia State College; D.D.S., 1970, Medical College of Virginia of Virginia Commonwealth University.
- Anderson, Ruth W. (1990) *Clinical Instructor in Pharmacy and Pharmaceutics* B.S., 1963, Medical College of Virginia.
- Anderson, William W. (1987) *Assistant Professor of Neurology* B.S., 1972, Tufts University; Ph.D., 1980, University of Oregon.
- Andrako, John (1956) *Interim Vice-President for Health Sciences; Associate Vice-President for Health Sciences and Professor of Medicinal Chemistry* B.S., 1947, M.S., 1949, Rutgers University; Ph.D., 1953, University of North Carolina at Chapel Hill.
- Andrako, John D. (1978) *Clinical Instructor in Pediatrics* B.S., 1971, University of North Carolina at Chapel Hill; M.D., 1975, Medical College of Virginia of Virginia Commonwealth University.
- Andrews, Jack Preston (1963) *Assistant Clinical Professor of Pediatrics* M.D., 1957, Medical College of Virginia.
- Ansell, Burness F., Jr. (1967) *Clinical Instructor in Internal Medicine* B.S., 1953, Hampden-Sydney College; M.D., 1957, Medical College of Virginia.
- Ansello, Edward F. (1989) *Professor of Gerontology and Director, Virginia Center on Aging* A.B., 1966, Boston College; M.Ed., 1967, Ph.D., 1970, University of Missouri.
- Anthony, Scott B. (1981) *Assistant Clinical Professor of Surgery* B.S., 1969, Davidson College; M.D., 1974, Washington University.
- Appley, Alan J. (1989) *Assistant Professor of Surgery* B.A., 1979, Franklin and Marshall College; M.D., 1983, Tulane University.
- Archer, Gordon L. (1975) *Professor of Internal Medicine* B.A., 1965, Washington and Lee University; M.D., 1969, University of Virginia.

- Ariga, Toshio (1989) *Associate Professor of Biochemistry and Molecular Biophysics* B.S., 1966, Kitasato University, Japan; M.S., 1969, Ph.D., 1986, Chiba University, Japan; Ph.D., 1983, Niigata University, Japan.
- Arkin, David L. (1980) *Assistant Clinical Professor of Pediatrics* B.S., 1969, City College of New York; M.D., 1977, Medical College of Wisconsin.
- Armstrong, Carl W. (1983) *Assistant Clinical Professor of Pathology* A.B., 1971, Kenyon College; M.D., 1975, Case Western Reserve University.
- Armstrong, Elaine L. (1985) *Clinical Instructor in Physical Therapy* B.S., 1981, Cleveland State University.
- Armstrong, Richard H. (1972) *Assistant Clinical Professor of Psychiatry* B.S., 1953, Maine Maritime Academy; M.D., 1961, Medical College of Virginia.
- Arnold, Gayle G. (1965) *Clinical Professor of Pediatrics* A.B., 1942, Johns Hopkins University; M.D., 1945, University of Maryland.
- Arnold, William V. (1983) *Lecturer in Patient Counseling* B.A., 1963, Southwestern at Memphis; B.D., 1966, Columbia Theological Seminary; Ph.D., 1970, Southern Seminary.
- Arrowood, James A. (1987) *Assistant Professor of Internal Medicine* B.S., 1970, University of Rhode Island; M.S., 1976, M.D., 1980, Pennsylvania State University.
- Arthur, Robert Miller (1965) *Associate Professor of Internal Medicine* A.B., 1950, University of North Carolina; M.D., 1954, Duke University.
- Ashworth, John S. (1964) *Clinical Instructor in Internal Medicine* B.A., 1954, Princeton University; M.D., 1958, Columbia University.
- Astin, Elizabeth W. (1990) *Clinical Instructor in Maternal-Child Nursing* B.S., 1963, Medical College of Virginia; M.S., 1976, Medical College of Virginia of Virginia Commonwealth University.
- Astruc, Juan A. (1967) *Professor of Anatomy* M.D., 1957, Ph.D., 1959, University of Granada, Spain.
- Atherton, Frances M. (1987) *Clinical Instructor in Occupational Therapy* B.S., 1979, Lynchburg College; M.S., 1981, Medical College of Virginia of Virginia Commonwealth University.
- Atiyeh, Wasfi A. (1960) *Assistant Clinical Professor of Otolaryngology* B.A., 1948, M.D., 1952, American University of Beirut, Lebanon.
- Atkins, Carl O., Jr. (1983) *Assistant Clinical Professor of Pediatric Dentistry* B.S., 1979, University of Virginia; D.D.S., 1983, Medical College of Virginia of Virginia Commonwealth University.
- Atkins, John D. (1980) *Clinical Instructor in Pharmacy and Pharmaceuticals* B.A., 1973, Duke University; B.S., 1976, Pharm.D., 1978, Medical College of Virginia of Virginia Commonwealth University.
- Atkins, Paul J. (1989) *Affiliate Assistant Professor of Pharmacy and Pharmaceuticals* B.Sc., 1978, Ph.D., 1982, University of London, U.K.
- Atkins, Robert R. (1985) *Instructor in Internal Medicine* B.A., 1975, Northeastern University; M.D., 1979, University of Pennsylvania.
- Atkinson, Gerald W. (1966) *Clinical Instructor in Neurology* B.A., 1952, Lincoln Memorial University; M.D., 1956, Medical College of Virginia.
- Atri, Padmini B. (1983) *Assistant Professor of Psychiatry* M.B.B.S., 1964, Patna University, India; M.S., 1972, Ranchi University, India.
- Atwill, William H. (1968) *Clinical Professor of Surgery* B.S., 1953, Virginia Military Institute; M.D., 1960, University of Virginia.
- Austin, Leonard A. (1962) *Assistant Clinical Professor of Pediatrics* B.S., 1953, Richmond Professional Institute; M.D., 1959, Medical College of Virginia.
- Austin, Raymond F., Jr. (1989) *Assistant Professor of Radiology* B.A., 1956, Dartmouth College; M.D., 1959, Harvard University.
- Avent, Mitchell A. (1979) *Associate Clinical Professor of Pediatric Dentistry* B.S., 1972, University of Georgia; D.D.S., 1976, Medical College of Virginia of Virginia Commonwealth University.
- Ayres, Stephen M. (1985) *Professor of Internal Medicine, Dean, School of Medicine, and Assistant Vice-President for Health Sciences* B.A., 1951, Gettysburg College; M.D., 1955, Cornell University.
- Baffi, Charles R. (1988) *Associate Clinical Professor of Preventive Medicine* B.A., 1969, St. John's University; M.P.H., 1975, City University of New York; Ph.D., 1979, University of Maryland.
- Bahlman, John H., Jr. (1977) *Assistant Clinical Professor of Pharmacy and Pharmaceuticals* B.S., 1974, Medical College of Virginia of Virginia Commonwealth University.
- Bailey, Pamela D. (1989) *Instructor in Surgery* B.S., 1983, Howard University; B.H.S., 1987, Duke University.
- Bailey, Robert L., Jr. (1964) *Clinical Associate in Internal Medicine* B.S., 1933, University of South Carolina; M.D., 1937, University of Virginia.
- Baird, Charles L., Jr. (1981) *Associate Clinical Professor of Anesthesiology* B.S., 1951, University of Richmond; M.D., 1957, Medical College of Virginia.
- Ball, John J., III (1982) *Assistant Clinical Professor of Family Practice* B.S., 1972, Michigan State University; M.D., 1976, Medical College of Virginia of Virginia Commonwealth University.
- Ballentine, Rollin L. (1987) *Associate Professor of Pharmacy and Pharmaceuticals* B.S., 1971, University of Cincinnati; Pharm.D., 1973, University of Michigan.

- Balseiro, Jesse (1988) *Assistant Professor of Radiology* B.S., 1976, University of Miami; M.D., 1981, Central University of the Caribbean.
- Balster, Robert L. (1973) *Professor of Pharmacology and Toxicology* B.S., 1966, University of Minnesota; Ph.D., 1970, University of Houston.
- Bamonte, John A., Jr. (1985) *Clinical Instructor in Oral and Maxillofacial Surgery* B.S., 1980, Allegheny College; D.M.D., 1984, M.S., 1985, University of Pittsburgh.
- Bampton, Betsy A. (1965) *Associate Professor of Maternal-Child Nursing and Interim Director of the Undergraduate Program, School of Nursing* A.A., 1957, Frostburg State College; B.S., 1960, Medical College of Virginia; M.S., 1965, University of Maryland; Ed.D., 1987, College of William and Mary.
- Banks, William L., Jr. (1965) *Professor of Biochemistry and Molecular Biophysics and Surgery* B.S., 1958, Rutgers University; M.S., 1961, Bucknell University; Ph.D., 1963, Rutgers University.
- Banner, Robert L. (1977) *Associate Clinical Professor of Surgery* B.S., 1948, M.D., 1950, University of Tennessee.
- Barbaccia, Joseph G. (1984) *Clinical Instructor in Pharmacy and Pharmaceutics* B.S., 1973, Rutgers University; Pharm.D., 1975, Philadelphia College of Pharmacy and Science.
- Barbatti, Carlin A. S. (1981) *Clinical Instructor in Pharmacy and Pharmaceutics* B.S., 1973, St. Louis College of Pharmacy.
- Barbieri, Steven J. (1988) *Clinical Instructor in Endodontics* B.A., 1980, Queens College; D.D.S., 1984, Medical College of Virginia of Virginia Commonwealth University.
- Barbosa, Cecilia E. (1990) *Instructor in Health Administration* B.A., 1977, Smith College; M.P.H., 1982, M.C.R.P., 1984, University of California, Berkeley.
- Barker, Thomas C. (1967) *Dean, School of Allied Health Professions, and Professor of Health Administration* B.S., 1954, M.A., 1960, Ph.D., 1963, State University of Iowa.
- Barlow, Gordon K. (1979) *Assistant Clinical Professor of Pharmacy and Pharmaceutics* B.S., 1974, University of Pittsburgh.
- Barnard, W. Calvin (1979) *Assistant Clinical Professor of Restorative Dentistry* B.S., 1973, North Carolina State University; D.D.S., 1977, Medical College of Virginia of Virginia Commonwealth University.
- Barnes, Richard D. (1979) *Associate Clinical Professor of Restorative Dentistry* B.S., 1966, Virginia Polytechnic Institute and State University; D.D.S., 1977, Medical College of Virginia of Virginia Commonwealth University.
- Barnes, Robert F., Jr. (1977) *Associate Professor of Restorative Dentistry* B.A., 1967, University of Virginia; D.D.S., 1973, Medical College of Virginia of Virginia Commonwealth University.
- Barr, Kevin W. (1987) *Affiliate Instructor in Health Administration* A.A.S., 1978, Central Virginia Community College; B.S., 1981, Medical College of Virginia of Virginia Commonwealth University; M.B.A., 1983, Virginia Commonwealth University.
- Barr, William H. (1972) *Professor and Chairman, Department of Pharmacy and Pharmaceutics* B.S., 1960, Pharm.D., 1961, Ph.D., 1966, University of California, San Francisco.
- Barrell, Lorna M. (1982) *Associate Professor and Chairman, Department of Community and Psychiatric Nursing, and Interim Director of the Master's Program, School of Nursing* B.S., 1955, University of Minnesota; M.S., 1970, Ph.D., 1980, University of Illinois.
- Barrett, Charles H. (1980) *Clinical Instructor in Pediatric Dentistry* B.A., 1975, University of Virginia; D.D.S., Medical College of Virginia of Virginia Commonwealth University.
- Barrett, Frances E. (1956) *Assistant Professor of Internal Medicine* M.D., 1949, University of Virginia.
- Barringer, Michael L. (1967) *Clinical Instructor in Pediatrics* B.A., 1952, University of North Carolina; M.D., 1962, Bowman Gray Medical School.
- Bartolacci, A. Elizabeth (1988) *Assistant Clinical Professor of Nursing Administration and Information Systems* B.S.N., 1967, University of Virginia; M.S., 1976, Ohio State University.
- Bartolf, Michael M. (1981) *Research Instructor in Biochemistry and Molecular Biophysics* B.S., 1968, Villanova University; Ph.D., 1978, Rutgers University.
- Baskerville, Archer L. (1981) *Assistant Clinical Professor of Internal Medicine* B.S., 1969, M.D., 1973, Medical College of Virginia of Virginia Commonwealth University.
- Baskett, Sarah J. (1989) *Assistant Professor of Psychiatry* B.A., 1961, Earlham College; M.D., 1965, Indiana University.
- Bass, Stuart K. (1990) *Assistant Professor of Anesthesiology* B.S., 1979, University of Richmond; M.D., 1983, Medical College of Virginia of Virginia Commonwealth University.
- Bass, Yvonne D. (1987) *Clinical Instructor in Medical-Surgical Nursing* B.S., 1974, Virginia Union University; B.S., 1976, M.S., 1986, Medical College of Virginia of Virginia Commonwealth University.
- Bassham, H. Lee (1981) *Associate Clinical Professor of Radiology* B.S., 1956, Centenary College of Louisiana; M.D., 1960, Louisiana State University.
- Bates, Robert H., Jr. (1983) *Assistant Clinical Professor of Family Practice* B.S., 1953, Roanoke College; M.D., 1957, Medical College of

- Virginia.
- Bates, Robley D., III (1987) *Clinical Instructor in Surgery* B.A., 1964, University of Virginia; M.D., 1972, Medical College of Virginia of Virginia Commonwealth University.
- Battista, Joseph Victor (1975) *Clinical Instructor in Obstetrics and Gynecology* A.B., 1964, Princeton University; M.D., 1968, Cornell University.
- Bauernfeind, Robert A. (1983) *Associate Professor of Internal Medicine* A.B., 1969, M.D., 1973, University of Illinois.
- Baughan, Linda W. (1986) *Assistant Professor of Restorative Dentistry* B.S., 1973, Christopher Newport College; M.Ed., 1978, Virginia Commonwealth University; D.D.S., 1983, Medical College of Virginia of Virginia Commonwealth University.
- Baumgarten, Clive Marc (1979) *Associate Professor of Physiology* B.A., 1970, Ph.D., 1976, Northwestern University.
- Baxter, E. Dale (1983) *Instructor in Medical-Surgical Nursing* B.S.N., 1977, M.S.N., 1980, University of Alabama.
- Bayer, Frederick W. (1968) *Clinical Instructor in Rehabilitation Medicine* M.D., 1950, University of Louisville.
- Baylor, Richard N. (1954) *Assistant Clinical Professor of Internal Medicine* M.D., 1946, Medical College of Virginia.
- Beaman, Mark A. (1985) *Clinical Instructor in Pharmacy and Pharmaceutics* B.S., 1979, University of Florida; M.S., 1981, University of Georgia.
- Bear, Harry D. (1984) *Associate Professor of Surgery* B.A., 1971, Yale University, M.D., 1975, Ph.D., 1978, Medical College of Virginia of Virginia Commonwealth University.
- Beazley, Wyatt S., III (1969) *Associate Clinical Professor of Surgery* B.A., 1957, University of Virginia; M.D., 1961, Medical College of Virginia.
- Bechard, Daniel E. (1981) *Assistant Professor of Internal Medicine* B.A., 1973, Harpur College; M.D., 1978, State University of New York Upstate.
- Beck, David A. (1980) *Associate Professor of Restorative Dentistry* B.S., 1974, University of New Mexico; D.D.S., 1977, Baylor University.
- Beck, Ralph E. (1968) *Associate Clinical Professor of Pathology* A.B., 1954, M.D., 1957, University of Illinois.
- Becker, Elmore J. (1965) *Assistant Clinical Professor of Internal Medicine* A.B., 1952, Georgetown University; M.D., 1956, University of Virginia.
- Becker, Stanley H. (1983) *Assistant Clinical Professor of Dermatology* B.S., 1967, University of Richmond; M.D., 1971, Medical College of Virginia of Virginia Commonwealth University.
- Becker, Virginia K. (1989) *Instructor in Gerontology* B.A., 1981, Christopher Newport College; M.S.W., 1983, Virginia Commonwealth University.
- Bedinger, Robert W. (1958) *Assistant Clinical Professor of Internal Medicine* M.D., 1948, Medical College of Virginia; B.S., 1968, Virginia Military Institute.
- Beeston, John T., III (1978) *Assistant Professor of Nurse Anesthesia* B.S., 1976, M.A., 1978, University of Minnesota.
- Begun, James W. (1983) *Professor of Health Administration* B.A., 1972, M.A., 1975, Ph.D., 1977, University of North Carolina.
- Beirne, Edward B., Jr. (1981) *Assistant Clinical Professor of Family Practice* B.A., 1962, Virginia Military Institute; M.D., 1966, Medical College of Virginia.
- Bell, Bertha R. (1974) *Assistant Professor of Community and Psychiatric Nursing* B.A., 1957, St. Joseph College; M.S., 1960, Boston College; M.S., 1971, University of Maryland; Ed.D., 1987, College of William and Mary.
- Bell, Patricia E. (1989) *Assistant Professor of Internal Medicine* B.A., 1976, Emory University; M.D., 1980, Washington University.
- Bell, Sandra A. (1981) *Clinical Instructor in Pediatrics* B.S., 1972, Virginia State University; M.D., 1978, Medical College of Virginia of Virginia Commonwealth University.
- Belt, Douglas S. (1978) *Assistant Clinical Professor of Restorative Dentistry* B.S., 1970, University of Richmond; D.D.S., 1974, Medical College of Virginia of Virginia Commonwealth University.
- Bennett, Emily C. (1976) *Assistant Clinical Professor of Obstetrics and Gynecology* B.S., 1972, M.S., 1976, Medical College of Virginia of Virginia Commonwealth University.
- Bennett, Robert M. (1988) *Associate Clinical Professor of Family Practice* B.S.M.E., 1967, University of Virginia; M.D., 1973, Medical College of Virginia of Virginia Commonwealth University.
- Bennett, William J. (1977) *Associate Clinical Professor of Pediatric Dentistry* B.S., 1971, Wake Forest University; D.D.S., 1975, University of Maryland.
- Bentley, Jack K. (1981) *Assistant Professor of Radiology* B.S., 1952, Emory and Henry College; M.D., 1956, University of Virginia.
- Benton, Ronald E. (1988) *Lecturer in Biomedical Engineering* B.S., 1969, M.S., 1972, University of North Carolina at Chapel Hill.
- Berg, Phyllis A. (1984) *Assistant Clinical Professor of Psychiatry* B.A., 1972, University of Wisconsin; Ph.D., 1977, Bowling Green State University.
- Berman, Wallace F. (1977) *Associate Professor of Pediatrics and Chairman, Division of Pediatric Gastroenterology and Nutrition* B.S., 1967, M.D., 1969, University of Minnesota.

- Bernd, David L. (1982) *Lecturer in Health Administration* B.A., 1971, College of William and Mary; M.H.A., 1973, Medical College of Virginia of Virginia Commonwealth University.
- Bernhard, Elizabeth A. (1983) *Clinical Instructor in Dental Hygiene* B.S., 1971, Columbus College; D.M.D., 1975, Medical College of Georgia.
- Bernier, William E. (1985) *Associate Clinical Professor of Endodontics* D.D.S., 1963, Marquette University; M.A., 1980, George Washington University.
- Berry, Alison J. (1986) *Assistant Professor of Internal Medicine* B.S., 1975, Texas A and M University; M.D., 1979, University of Texas.
- Berry, Lauri S. (1986) *Clinical Instructor in Dental Hygiene* B.S., 1984, Medical College of Virginia of Virginia Commonwealth University.
- Berryman, Richard M. (1975) *Clinical Instructor in Pharmacy and Pharmaceutics* B.S., 1963, Medical College of Virginia.
- Best, Alvin M. (1985) *Affiliate Assistant Professor of Biostatistics* B.S., 1971, University of Tennessee; M.S., 1977, University of North Carolina; Ph.D., 1984, Medical College of Virginia of Virginia Commonwealth University.
- Betcher, Sylvia L. (1987) *Assistant Professor of Internal Medicine* B.A., 1970, University of Rochester; Ph.D., 1977, Duke University; M.D., 1980, University of Miami.
- Beyer, James C. (1980) *Lecturer in Legal Medicine* B.S., 1940, St. Ambrose College; M.D., 1946, M.S., 1950, Loyola University.
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- Harbison, John W. (1970) *Professor of Neurology and Chairman, Division of Neuro-Ophthalmology; Associate Dean for Graduate Education, School of Medicine* B.A., 1959, M.D., 1962, University of Iowa.
- Hard, Richard C., Jr. (1966) *Associate Professor of Pathology* B.S., 1954, Northwestern University; M.D., 1958, St. Louis University.
- Harden, Russell S. (1985) *Clinical Instructor in Restorative Dentistry* B.S., 1971, Hampden-Sydney College; M.Ed., 1974, Virginia Commonwealth University; D.D.S., 1978, Medical College of Virginia of Virginia Commonwealth University.
- Hardigan, James E. (1975) *Associate Professor of Oral and Maxillofacial Surgery and Assistant Dean for Administrative Affairs, School of Dentistry* B.A., 1968, M.B.A., 1970, Northeastern University; Ph.D., 1975, Cornell University.
- Harkins, Stephen W. (1979) *Professor of Gerontology and Psychiatry* A.A., 1963, Montreat-Anderson Junior College; A.B., 1966, Ph.D., 1974, University of North Carolina.
- Harkrader, James (1977) *Clinical Instructor in Ophthalmology* B.A., 1964, Virginia Military Institute; M.D., 1969, Medical College of Virginia of Virginia Commonwealth University.
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- Harrelson, Austin B. (1969) *Associate Clinical Professor of Neurology* B.S., 1957, Hampden-Sydney College; M.D., 1962, Medical College of Virginia.
- Harrington, Walter G. (1975) *Associate Professor of Restorative Dentistry* A.B., 1965, D.D.S., 1969, Case Western Reserve University.
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- Hoffman, Marie A. (1986) *Clinical Instructor in Radiation Sciences* B.S., 1984, State University of New York.
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- Hollis, Lauwana E. (1988) *Clinical Instructor in Pharmacy and Pharmaceutics* B.A., 1983, Pharm.D., 1988, University of California.
- Holmes, Walter M. (1977) *Associate Professor of Microbiology and Immunology* B.S., 1964, M.S., 1967, Memphis State University; Ph.D., 1974, University of Tennessee.
- Holsapple, Caroline K. (1987) *Affiliate Instructor in Pharmacology and Toxicology* B.S., 1978, College of William and Mary; Ph.D., 1983, Medical College of Virginia of Virginia Commonwealth University.
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- Hong, Jau-Shyong (1985) *Affiliate Associate Professor of Pharmacology and Toxicology* B.S., 1966, M.S., 1970, National Taiwan University, Republic of China; Ph.D., 1973, University of Kansas.
- Hoover, M. Josiah, Jr. (1965) *Clinical Professor of Surgery* A.B., 1931, University of Richmond; Th.M., 1934, Southern Baptist Seminary; M.D., 1940, Medical College of Virginia.
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- Hopkins, Kathleen (1984) *Clinical Instructor in Psychiatry* B.S., 1969, Ohio State; M.S.W., 1977, Medical College of Virginia of Virginia Commonwealth University.
- Horne, Allen B. (1972) *Assistant Clinical Professor*

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- Horsley, J. Shelton, III (1976) *Professor of Surgery* B.A., 1950, M.D., 1953, University of Virginia.
- Horvathich, Paula K. (1982) *Assistant Professor of Internal Medicine* B.S., 1972, M.S., 1974, Ph.D., 1977, Purdue University.
- Hosick, Jeri Z. (1987) *Instructor in Psychiatry* B.A., 1970, Washington University; M.A., 1972, Northwestern University.
- Hossaini, Ali A. (1963) *Professor of Pathology* B.S., 1953, American University of Beirut, Lebanon; M.S., 1956, Texas Christian University; Ph.D., 1960, Ohio State University.
- Howard-Peebles, Patricia N. (1988) *Affiliate Professor of Human Genetics* B.S.Ed., 1963, Central State University; Ph.D., 1969, University of Texas at Austin.
- Howe, Craig W. S. (1986) *Assistant Professor of Internal Medicine* B.S., 1969, University of Minnesota; Ph.D., 1974, University of Cambridge, U.K.; M.D., 1978, Cornell University.
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- Howells, Robert (1967) *Assistant Professor of Radiology* B.Sc., 1962, University of Wales, U.K.
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- Hubach, Frederick W. (1988) *Assistant Clinical Professor of Family Practice* B.A., 1954, Western Maryland College; M.D., 1958, George Washington University.
- Huband, Albert L., Jr. (1970) *Associate Clinical Professor of Restorative Dentistry* B.S., 1951, University of Richmond; D.D.S., 1956, Medical College of Virginia.
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- Hughes, Thomas E. (1990) *Clinical Instructor in Pharmacy and Pharmaceuticals* B.S., 1983, University of Montana; Pharm.D., 1989, Philadelphia College of Pharmacy and Science.
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- Hulbert, Mary S. (1965) *Assistant Clinical Professor of Psychiatry* B.A., 1942, Wooster College; M.A., 1944, Chicago Theological

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- Hurt, Terry W. (1989) *Assistant Professor of Anesthesiology* B.S., 1980, Vanderbilt University; M.D., 1985, University of Tennessee.
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- Jacey, Robert W. (1974) *Assistant Clinical Professor of Ophthalmology* M.D., 1966, University of Illinois.
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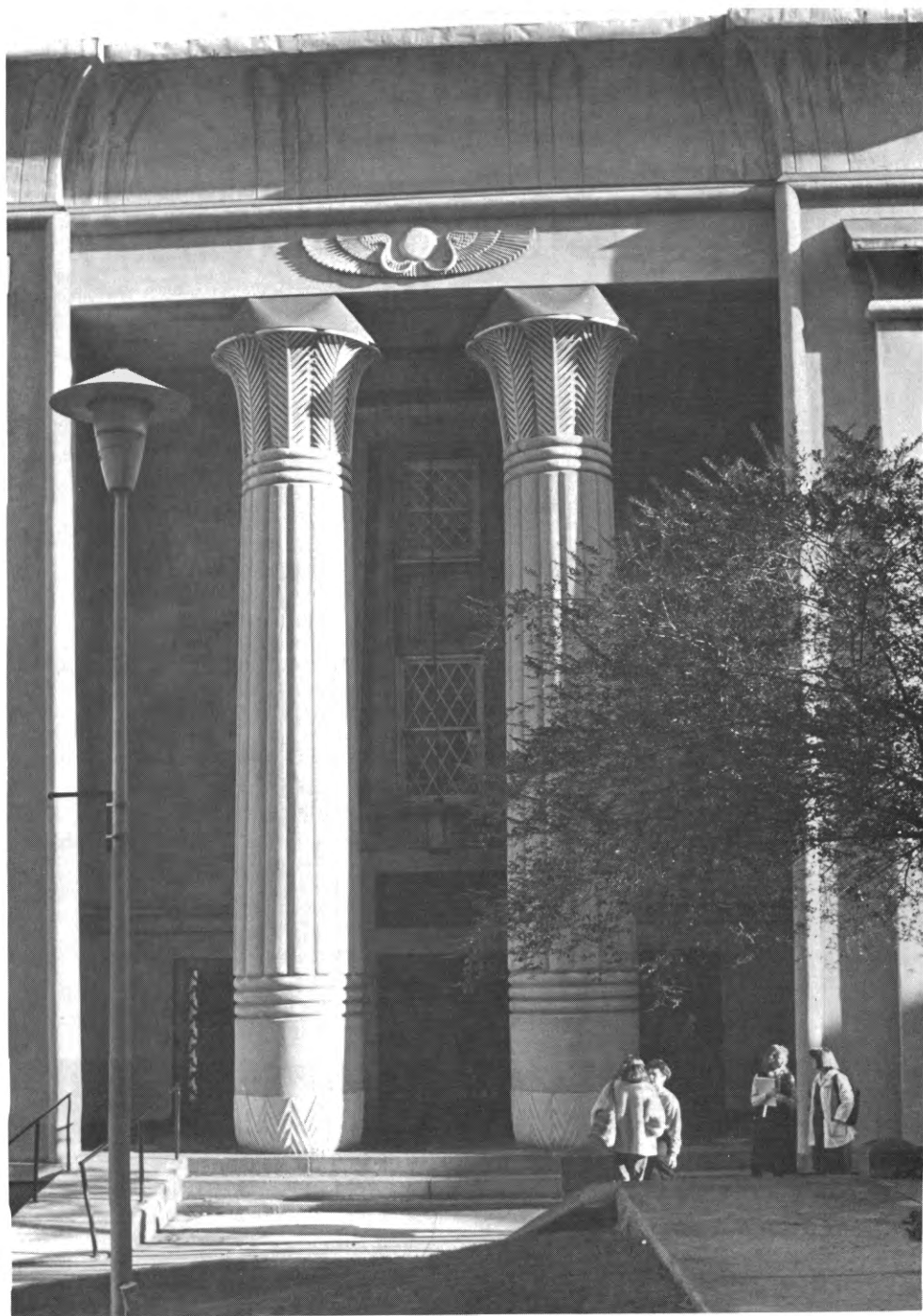
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- Thompson, W. Taliaferro, Jr. *Professor of Medicine* A.B., 1934, Davidson College; M.D., 1938, Medical College of Virginia.
- Toone, Elam C., Jr. *Professor of Internal Medicine* B.A., 1929, Hampden-Sydney College; M.D., 1934, Medical College of Virginia.
- Ulmer, Jack L. *Professor of Surgery* B.A., 1933, Mississippi College; M.D., 1937, Vanderbilt University.
- Watts, Daniel T. *Professor of Pharmacology and Dean, School of Basic Sciences* B.S., 1937, Elon College; Ph.D., 1942, Duke University.
- Weaver, Warren E. *Professor of Pharmaceutical Chemistry and Dean, School of Pharmacy* B.S., 1942, Ph.D., 1947, University of Maryland.
- Welshimer, Herbert J. *Professor of Microbiology and Immunology* B.S., 1943, Ph.D., 1947, Ohio State University.
- Williams, Carrington, Jr. *Clinical Professor of Surgery* B.A., 1938, University of Virginia; M.D., 1942, Harvard University.
- Wolfe, Eleanor V. *Associate Professor of Occupational Therapy* B.S., 1945, University of North Carolina; M.A., 1951, Texas Women's University.
- Wood, John H. *Professor of Pharmacy and Pharmaceutics* B.Sc., 1946, M.Sc., 1947, University of Manitoba; Ph.D., 1950, Ohio State University.
- Wood, Maurice *Professor of Family Practice* M.B., B.S., 1945, Durham University, U.K.
- Woods, Lauren A. *Professor of Pharmacology and Toxicology and Vice-President for Health Sciences* B.S., 1939, Dakota Wesleyan University; Ph.D., 1943, Iowa State University; M.D., 1949, University of Michigan.
- Yingling, Doris B. *Professor and Dean, School of Nursing* B.S., 1944, University of Oregon; M.A., 1951, Ed.D., 1956, University of Maryland.
- Young, Nelson F. *Professor of Pathology* B.S., 1935, University of Washington; Ph.D., 1945, New York University.



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Annual Notice to Students Concerning Their Privacy Rights

Pursuant to a federal statute enacted to protect the privacy rights of students (Family Educational Rights and Privacy Act of 1974, as amended, enacted as Section 438 of the General Education Provisions Act), eligible students of Virginia Commonwealth University are permitted to inspect and review education records of which the student is the subject. A list of education records maintained by the University is available from University Enrollment Services/Records and Registration. A statement of University policy concerning inspection and disclosure of education records has been formulated in compliance with the federal statute. Copies of the policy are also available from University Enrollment Services/Records and Registration.

Generally, the Act provides that no personally identifiable information will be disclosed without

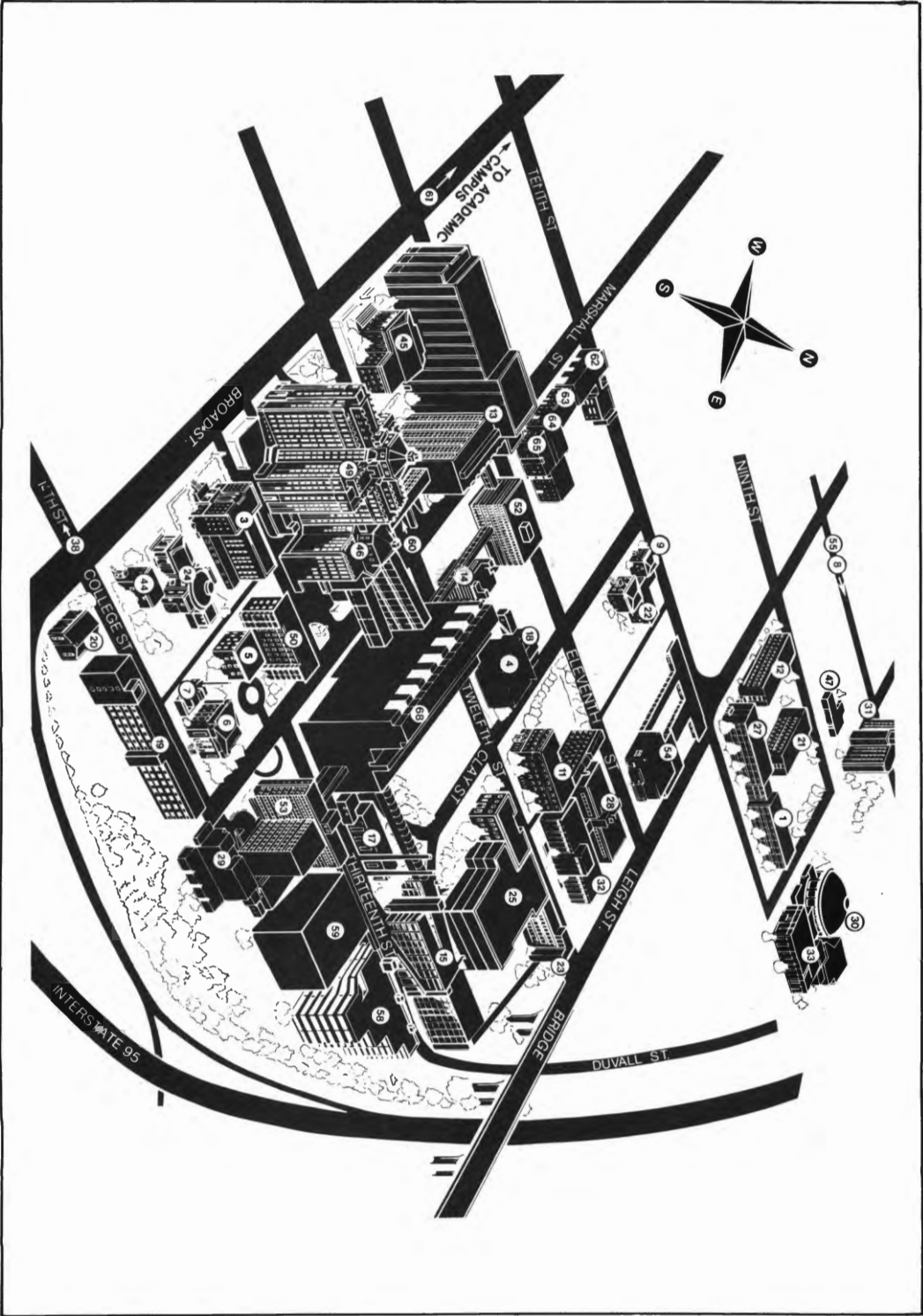
the student's consent, except for directory information and information to other school officials with a legitimate educational interest. When personally identifiable information, other than directory information, is disclosed, a record will be maintained of these disclosures. This record is also available for inspection and review by the student.

If an eligible student feels that his or her education record is inaccurate, misleading, or otherwise in violation of the student's privacy or other rights, the student may request an amendment to the record.

Should the University fail to comply with the requirements of the Act, the student has the right to file a complaint with the Family Policy and Regulations Office, U.S. Department of Education, Washington, D.C. 20202.

Code Building

- | | | |
|---|---|--|
| 1 Bear Hall, 10th & Leigh Sts. | 21 Rudd Hall, 10th & Leigh Sts. | 52 Nelson Clinic, 401-09 N. 11th St. |
| 3 Nursing Education Building, 1220 E. Broad St. | 22 Sheltering Arms Building, 1008 E. Clay Street | 53 North Hospital, 1300 E. Marshall St. |
| 4 Robert Blackwell Smith, Jr., Building, 410 N. 12th St. | 23 Strauss Research Laboratory, 527 N. 12th | 54 Virginia Treatment Center, 515 N. 10th St. |
| 5 Dooley Building, 1225 E. Marshall St. | 24 Monumental Church, 1224 E. Broad St. | 55 MCV Hospitals Heliport |
| 6 Egyptian Building, 1223 E. Marshall St. | 25 Tompkins-McCaw Library, 509 N. 12th St. | 58 Faculty/Staff Parking Deck (Lot D), 515 N. 13th St. |
| 7 Pathological Incinerator, 316 College St. | 27 Warner Hall, 10th & Leigh Sts. | 59 MCV Hospital Clinical Support Center, 403 N. 13th St. |
| 8 Facilities Management Shops Building, 659 N. 8th St. | 28 Wood Memorial Building, 521 N. 11th St. | 60 George Ben Johnston Auditorium, 305 N. 12th St. |
| 9 Leigh House, 1000 E. Clay St. | 29 Massey Cancer Center, 401 College St. | 61 Richmond Plaza Building, 110 S. 7th St. |
| 11 McGuire Hall, 1112 E. Clay St. | 30 Larrick Student Center, 641 N. 8th St. | 62 Virginia Mechanics Institute Building, 1000 E. Marshall St. |
| 12 McRae Hall, 10th & Leigh Sts. | 31 Cabaniss Hall, 600 N. 8th St. | 63 Zeigler House, 1006-08 E. Marshall St. |
| 13 Sanger Hall, 1101 E. Marshall St. | 32 Lyons Dental Building, 520 N. 12th St. | 64 Samuel Putney House, 1010 E. Marshall St. |
| 14 Ambulatory Care Center, 408 N. 12th St. | 33 Gymnasium, 9th & Leigh Sts. | 65 Stephen Putney House, 1012 E. Marshall St. |
| 15 MCV/VCU Visitor/Patient Parking Deck, 1220 E. Clay St. | 38 Consolidated Lab. Building, 9 N. 14th St. | 68 Main MCV Hospital, 401 N. 12th St. |
| 17 Central Heating & Power Plant, 400 N. 13th St. | 44 Newton House, College & Broad Sts. | 70 Faculty/Staff Parking Deck (Lot E), N. 12th St. |
| 18 MCV Alumni House, 1105 E. Clay St. | 45 First Baptist Church, 323 N. 12th St. | 121 Finance Building, 327 W. Main St. |
| 19 Randolph-Minor Hall, 307-15 College St. | 46 A. D. Williams Memorial Clinic, 1201 E. Marshall St. | |
| 20 Randolph-Minor Annex, 301 College St. | 47 VCU Day Nursery, 610 N. 9th St. | |
| | 49 West Hospital, 1200 E. Broad St. | |
| | 50 East Hospital, 1215 E. Marshall St. | |



MCV Campus

ACADEMIC

13 Academic Computing, Department of
 13 Academic Pathology
 64 Administrative Offices, MCV Campus
 11 Adult Learning Center
 6 Allied Health Professions, Administrative Offices
 6 Allied Health Professions, School of
 13 Anatomy, Department of
 49 Anesthesiology, Department of
 6 Baruch Auditorium
 13 Basic Health Sciences, Administrative Offices
 13 Basic Health Sciences, School of
 1 Bear Hall, Dormitory
 13 Biochemistry & Molecular Biophysics, Department of
 13 Biostatistics, Department of
 32 Business Offices, MCV Student Accounts
 121 Business Offices, University
 3 Cabaniss Hall
 45 Campus Room Restaurant
 49 Cardiac & Thoracic Surgery
 13 Cardiology
 13 Cardiopulmonary Labs & Research
 22 Center on Aging
 3 Community & Psychiatric Nursing, Department of
 6 Continuing Medical Education
 32 Dental Hygiene Program
 32 Dentistry, Administrative Offices
 28 Dentistry, School of
 13 Dermatology, Department of
 31 Cabaniss Hall, Dormitory
 21 Rudd Hall, Dormitory
 62 Educational Development & Faculty Resources, Center for
 6 Egyptian Building
 13 Endocrinology & Metabolism
 32 Endodontics, Department of
 49 Family Practice, Department of
 45 Financial Aid Office, Student, MCV
 13 Gastroenterology
 60 George Ben Johnston Auditorium
 64 Gerontology
 13 Graduate Studies, School of
 33 Gymnasium
 20 Health Administration, Department of
 64 Health Sciences, Vice-President for
 13 Hematology & Oncology
 63 Hospitality House, MCVH
 1 Housing, Division of Student Services
 13 Human Genetics, Department of
 13 Immunology & Connective Tissue Disease
 13 Infectious Disease
 11 Innovative Technology, Center for
 13 Internal Medicine, Department of
 30 Larrick Student Center
 38 Legal Medicine, Department of
 9 Leigh House
 25 Library, Tompkins-McCaw
 32 Lyons Dental Building
 3 Maternal-Child Nursing, Department of
 11 McGuire Hall
 12 McRae Hall, Dormitory
 13 Medical Oncology
 3 Medical-Surgical Nursing, Department of
 20 Medical Technology (SAHP), Department of
 4 Medicinal Chemistry, Department of
 13 Medicine, School of
 13 Microbiology & Immunology, Department of
 13 Nephrology
 13 Neurology, Department of

13 Neuropathology
 49 Neurosurgery, Division of
 22 Newton House
 49 Nurse Anesthesia, Department of
 3 Nursing Administration & Information Systems, Department of
 3 Nursing Education Building
 3 Nursing, School of
 13 Obstetrics & Gynecology, Department of
 62 Occupational Therapy (SAHP), Department of
 32 Oral Pathology, Department of
 32 Orthodontics, Department of
 13 Pathology, Department of
 44 Patient Counseling, Program of
 13 Pediatrics, Department of
 32 Periodontics, Department of
 62 Personnel Department
 4 Pharmacology & Toxicology, Department of
 4 Pharmacy & Pharmaceuticals, Department of
 4 Pharmacy, School of
 11 Physical Therapy (SAHP), Department of
 13 Physiology, Department of
 50 Preventive Medicine, Department of
 49 Psychiatry, Department of
 49 Pulmonary Disease
 13 Radiation Biology
 13 Radiation Physics
 49 Radiation Sciences (SAHP), Department of
 13 Radiology, Department of
 20 Randolph-Minor Annex
 6 Rehabilitation Medicine, Department of
 32 Removable Prosthodontics, Department of
 13 Research & Graduate Studies, VCU Office of
 32 Restorative Dentistry, Department of
 55 Richmond Academy of Medicine
 4 Robert Blackwell Smith, Jr., Building
 21 Rudd Hall, Dormitory
 64 Samuel Putney House
 13 Sanger Hall
 22 Sheltering Arms Building
 13 Sponsored Programs Administration
 65 Stephen Putney House
 23 Strauss Research Laboratory
 32 Student Accounts
 27 Student Affairs, Office of the Dean
 30 Student Cafeteria
 13 Surgery, Department of
 13 Surgical Pathology
 61 Telecommunications
 25 Tompkins-McCaw Library
 45 University Counseling Services
 13 University Enrollment Services/Admissions, Records, & Registration
 13 University Media Services Center
 52 Urology
 62 Virginia Mechanics Institute Building
 27 Warner Hall, Dormitory
 28 Wood Memorial Building
 63 Zeigler House

HOSPITALS

46 A. D. Williams Memorial Clinic
 68 Administration, MCVH
 68 Admitting Office, MCVH
 19 Adolescent Medicine Clinic
 14 Ambulatory Care Center
 14 Ambulatory Surgery

122 Associated Physicians Administrative & Main Office
 52 Associated Physicians Information
 59 Business Offices, Hospital
 8, 49 Cashier, MCVH
 54 Child Psychiatry
 59 Clinical Pathology
 50 Clinical Pharmacology
 49 Clinical Psychology
 59 Clinical Support Center, MCVH
 32 Dental Clinics
 28 Dental Faculty Practice Clinics
 68 Diagnostic Radiology
 50 East Building (St. Philip)
 68 Emergency Services
 52 Health Testing Center
 49 Information, Patient
 68 Information, Patient
 68 Main Hospital
 29 Massey Cancer Center
 14 MCV Audiology Clinic
 14 MCV Eye Clinic
 52 Nelson Clinic
 53 North Hospital (E. G. Williams)
 53 Nuclear Medicine
 19 Nursing Education, Department of, MCVH
 49 Nursing Services Personnel Office, MCVH
 53 Occupational Therapy, Department of, MCVH
 53 Oncology Clinic
 52 Ophthalmology, Department of
 32 Oral & Maxillofacial Surgery, Department of
 52 Orthopedic Surgery
 14 Otolaryngology, Department of
 68 Patient Accounting
 68 Patient Resources
 50 Pediatric Cardiology
 32 Pediatric Dentistry, Department of
 19 Pediatric Neurology
 52 Pediatric Surgery
 19 Pediatrics Clinics
 49 Personnel Department, MCVH
 52 Plastic Surgery
 19 Psychiatric Outpatient Clinic
 29 Radiation Therapy
 19 Randolph-Minor Hall
 50 Sickie Cell Anemia Clinic
 52 Surgical Oncology
 52 Trauma/General Surgery
 52 Vascular/General Surgery
 49 West Hospital (MCV Hospital)

AUXILIARY

49 Alumni Association, MCV
 52 Bank of Virginia Branch
 11 Bookstore
 22 Campus Police
 122 Computer Center
 52 11th Street Cafe
 49 Employee Health Services
 13 Environmental Health & Safety Office
 9 Facilities Management
 8 Facilities Management Shops Building
 65 MCV Foundation
 55 MCV Hospitals Heliport
 70, 52 Parking Deck, Faculty/Staff
 15 Parking Deck, MCV/VCU Visitor/Patient
 52 Parking, Nelson Clinic Patients
 62 Parking Office, MCV
 62 Post Office
 45 Print Shop
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